THE

AMERICAN JOURNAL OF PHARMACY

APRIL, 1852.

AN ANALYSIS OF ERGOT OF RYE.

(*Being an Inaugural Thesis presented to the Philadelphia College of Pharmacy.*)

By T. Roberts Baker, of Richmond, Virginia.

In selecting Ergot as the subject of my thesis, it was with no intention of entering into an account of the natural, botanical, or commercial history of the article, which would be a mere repetition of what is contained in every standard work on Materia Medica; but with a view of adding a few more links to the chain of scientific information already acquired in relation to its chemical constitution.

By thus lifting a little higher the veil of obscurity which has so long impeded the claims of Ergot as an eligible therapeutical agent, and bringing some of its hidden properties within the grasp of the practical pharmaceutist, it may become entitled to a higher rank in therapeutical Materia Medica. Some of the most prominent questions which remain to be definitely settled in regard to Ergot are these:

1. As to its origin, whether it is an excrescence produced by an insect, or a true member of the fungus tribe?

2. Whether it contains one or more characteristic principles in which the active medicinal properties reside?

3. How such a principle can be isolated?

4. What are the general properties of various constituents of Ergot ?

These are some of the questions which depend chiefly upon chemical examination for their settlement, and which, with many others of importance, I hoped the results of the investigation I have made would have answered satisfactorily.

My investigation has been purely a chemical one, and I regret that, owing to circumstances beyond my control, the therapeutical application of the subject, although previously contemplated, was abandoned.

Analysis of Secale Cornutum, or Ergot.

Having procured a superior article of Ergot of German origin, I submitted it to proximate organic analysis by successive displacement with water, alcohol, and ether, and made a mineral analysis of its ashes. After repeated qualitative examinations as to the best method of treatment, I adopted the course indicated above as most free from objections. For where ether is first employed upon the ergot, portions of resin are extracted, rendering it difficult to obtain the oil in a state of purity; and if alcohol be first used, the extracted resin carries with it portions of oil and other matter which also hinder purification. The investigation was conducted in the laboratory of Professor Booth, to whom I am indebted for advice during the progress of my operations.

1. *Displacement by Water.*—The finely powdered ergot mixed with an equal bulk of pure sand, was treated with water in a displacement apparatus until the solution passing through was colorless.

The solution was dark brown, had an ergot odor, a sweetish but nauseous taste, and tested acid. It contained gum, sugar, albumen, one of the colored resins, nitrogenous extractive, and the soluble salts. After being somewhat concentrated by evaporation, a coagulated substance that appeared in it was separated by repose, decantation and washing. The precipitate agreed with albumen in its behaviour, giving off a large amount of ammonia when heated with potassa-lime, but did not show the blue color with muriatic acid in consequence of its dark brown color.

The solution and washings were evaporated to a syrupy consistence and treated with alcohol of 80°, which gave a viscid precipi-

tate in a clear brownish solution. After decantation, the viscid mass was softened with a little water and again treated with alcohol both cold and hot; and this operation repeated a third time. The precipitate thus freed from all that was soluble in alcohol was dried as far as practicable and weighed. The precipitate had a taste similar to that of gum, and consisted chiefly of gum and nitrogenous matter. It was soluble with a brownish red color in water, the alkalies, the acids, and in alcohol of 20°, but insoluble in ether and strong alcohol; its solution was precipitated entirely by acetate of lead and corrosive sublimate, and less perfectly by subacetate of lead and tannin; it was not altered by yellow prussiate of potash. It was charred by oil of vitriol; but by boiling with diluted sulphuric acid was partly changed into sugar. Heated with potassa-lime it gave off ammoniacal fumes.

The hot alcoholic solutions, by repose, deposited small four-sided prisms upon the sides of the glass, which agreed in form and behaviour with mushroom sugar; but as its amount was small, it was not deemed of sufficient importance to justify the analysis of a fresh portion of ergot with a view of determining its quality.

The alcoholic solutions thrown together, were evaporated to a soft extract, which could not be further hardened without decomposition. This is the ergotin of Bonjean, and contains the greater part of the nitrogenous extractive, together with a little resin. It is soluble in water, alcohol, the strong and dilute acids, and in the alkalies with a dark red color, which is deeper with the latter, and with sulphuric acid; its solution is precipitated by the acetates of lead, corrosive sublimate, and tannin, but not by yellow prussiate of potash; it evolves copious fumes of ammonia when treated with potassa-lime. Its behavior to reagents and its peculiar meat-like odor, recall the characteristics of osmazone.

2. *Displacement with Alcohol.*—After thorough displacement with water, the residue was similarly treated with alcohol of 80° until the latter passed through colorless.

The tinctures evaporated by water bath and dry hot air, became a mass of hard black crusts forming a net-work through a black oily liquid.

As the alcoholic solution tested acid, it was inferred to contain resin. The liquid being poured off, the residue was repeatedly

treated with hot alcohol, and the remaining hard resin weighed. The alcoholic solutions being reduced in bulk, formed a clear brown solution above the black oil; and were separated by decantation, and washing the oil with alcohol, hot and cold, until it ceased to give color. The tinctures upon evaporation gave a soft brownish-black resin. The alcoholic displacement therefore yielded a black oil and a soft and a hard resin.

The black oil yielded a slightly brown color to the acid, and alcohol, was insoluble in water, and perfectly soluble in ether with a brown color and acid test. It was saponified by potassa, and converted by chloride of calcium into a lime salt which was washed with ether to remove unaltered oil, and decomposed by muriatic acid.

The acid floating in the water was now soluble both in alcohol and ether, from which it appears that the black fluid was a true fat, and is probably the same oil which is extracted by ether, but colored by a foreign body which could not be removed.

a. Resin.—It was soft, brown, had a bitter taste, and very soluble in ether and hot alcohol, the latter solution when strong becoming cloudy on cooling; sparingly soluble in alcohol of 20°, imparted a slight tint to acetic and muriatic acids; dissolved in oil of vitriol with evolution of heat, but was reprecipitated by water apparently unaltered; sparingly soluble in potassa solution in the cold, more freely with heat, and is partly reprecipitated by water. Its alcoholic solution is not precipitated by alcoholic solutions of the acetates of lead and corrosive sublimate; is precipitated white by water, and bulky greenish white by yellow prussiate of potash.

The hard resin consisted of β resin slowly soluble in hot alcohol, with a brown color; and a hard black γ resin, wholly insoluble in alcohol and ether.

The solution of β tested acid, and was precipitated by subacetate of lead; both were soluble in potassa solution with a brown color, and in sulphuric acid, but other acids had very little effect on them.

3. *Displacement by Ether.*—Aqueous ether, freed from alcohol, was next employed by displacement as before, until the solution ceased to show fat by evaporation on glass or paper. The greater part of the ether having been removed by distillation, and the

remainder by exposure in the air pump; the residue was an almost colorless oil, from which a very small quantity of solid fat or wax separated by long repose. The solid was in too small amount to admit of its exact determination.

After complete extraction by water, alcohol, and ether, a substance remained which was separated from the sand by washing, and subjected to a few experiments. When treated with potassa-lime it evolved copious ammoniacal fumes, indicating a large content of nitrogen. Being prepared in the warm season, it soon commenced putrefying, which precluded further investigation into its nature. I may however state, that it closely agreed in its behavior with fungin.

The ash was determined by first removing the oil and a portion of the resin by ether, and burning the balance carefully in a platinum crucible, which gave a more correct result than if the whole ergot had been burnt off.

The following are the results of the analysis:

Gum, and a small amount of extractive, - -	7·940
Nitrogenous extractive, and Sugar, - - -	13·648
Albumen, - - - - - - -	0·430
Soft brown resin *a*, - - - - -	3·637
Hard black resins β and γ, - - - -	1·370
Black oil, - - - - - - -	1·702
Colorless oil, - - - - - -	32·377
Solid fat or wax, - - - - -	0·075
Ash, - - - - - - - -	4·440
Fungin, &c., insoluble in water, alcohol, and ether,	34·381
	100.000

Description of the Colorless Oil. The oil as obtained had a faint yellowish color, with a taste and odor similar to Castor oil. It had the specific gravity 0·9252, at a temperature of 60° F., and according to Wiggers, congeals at—22° F. It was very soluble in ether and chloroform, but almost insoluble in alcohol. When thoroughly washed successively with ether, alcohol and water, it was destitute of odor, and had an agreeable sweet taste. If too high a temperature be used to separate the oil from its ethereal solution the color is considerably deepened, but if carefully evapo-

rated at a low temperature it is almost colorless, and if under the air-pump entirely without color. As will be shown, it has the same ultimate constitution as castor oil, and its fat acids indicate a similar constitution to those of the latter oil in their combinations with bases.

I determined the composition of the pure colorless oil by burning it off with the oxide of copper and chromate of lead. The results of this analysis of oil of ergot are as follows:

	Oil.	*Carbonic Acid.*	*Water.*
I.	7·780 grs. yielded	——	8·050
II.	8·265 " "	22·43	8·545
III.	9·005 " "	24·35	9·460

These correspond to

	I.	II.	III.	*Average.*
Carbon	——	74·011	73·75	73·880
Hydrogen,	11·491	11·483	11·67	11·548
Oxygen	——	14·506	14·58	14·572
		100·	100·	100·

The result agrees with the analysis of castor oil, which, as before stated, this oil resembles closely in its odor and taste, but differs essentially from it in its insolubility in alcohol.

A portion of the oil being saponified by potash, a lead soap was prepared from it, of which four ultimate analyses were made, but it could not be obtained of constant composition, and yielded very unsatisfactory results. The lime soap was also examined and gave unsatisfactory returns.

Several analyses of the barytic soap gave the following results:

	I.	II.	III.	*Average.*	*Equiv.*	*Calculated.*
Carbon,	——	56.458	58.91	57.684	33	57.48
Hydrogen,	8.499	8.766	8.36	8.541	30	8.71
Oxygen,	——	34.776	32.73	11.405	5	11.61
Baryta,	——			22.370	1	22.20
		100.000	100.00	100.000		100.00

It was shown that the oil after cooling below 32° F., separated a very small amount of solid fat, which was removed. The balance being saponified by potassa and treated with chloride of cal-

cium, the lime soap thus formed was decomposed by muriatic acid, and the fat acid cooled below 32° F. and pressed at that temperature. The minute quantity of solid fat thus obtained, confirmed the conclusion that the greater part of the oil of ergot consists of an olein.

By substracting the formula of the acid in the barytic salt from the formula of the oil, (C_{41} H_{37} O_6—C_{33} H_{30} O_5), we have the formula C_8 H_7 O, which might be viewed as oxide of lipyl conjugate, with C_5 H_5, or as oxide of lipyl with H replaced by C_5 H_6.

Thus, $C_3 \left\{ \begin{matrix} H \\ C_5 H_6 \end{matrix} \right\} O_2 = C_8 H_7 O$.

If we compare the formula of the acid with that of ricinoleic acid, as determined by Svanberg and Kolmodin, and with the same as given by Saalmüller, we find the conjugates 3 C H and 5 C H.

		Difference,—	
Ergotoleic acid,	C_{33} H_{30} O_5		
Ricinoleic acid,	C_{36} H_{33} O_5,	C_3 H	Svanberg and Kolmodin.
Ditto, "	C_{38} H_{35} O_5,	C_5 H_5	Saalmüller.

It is possible that, from the difficulty of obtaining satisfactory results from the analysis of its salts, the oily acid of ergot may be C_{34} H_{31} O_5, which would make it differ by the common conjugate C_2 H_2 from the ricinoleic acid of Svanberg and Kolmodin, as the latter differs from that of Saalmüller.

Saalmüller informed Prof. Booth that he had experienced great difficulty in determining his acid from its constant liability to change in constitution.

Analysis of the Ashes of Ergot.

In order to avoid the loss of mineral matter in ergot, by volatilization during incineration, a fresh portion in fine powder was treated with ether, by which more than a third part was extracted, without losing any of the mineral components. The residue then carefully calcined at a low temperature, yielded 4.44 per cent. of ash.

The ash was then treated with water, by which it was divided into a soluble and insoluble portion, each of which was separately analysed.

1. The soluble portion, after evaporation to dryness and treatment with a little nitric acid, was mixed with diluted alcohol, by which the sulphate of lime was obtained. The phosphate of magnesia was then thrown down by ammonia, after getting rid of the alcohol and nitric acid. The solution was then divided into two parts, one of which was employed to determine chlorine, sulphuric acid, and magnesia; the other for the alkalies and magnesia. The quantity of chlorine was not appreciable.

2. The insoluble part of the ash was treated as a silicate, to obtain silica, and the muriatic solutions precipitated to get the joint weight of the phosphates. These were fused with carbonate of soda, the phosphoric acid determined by iron from the aqueous solution, and the bases in the usual manner.

A serious loss occurred in the insoluble portion, the cause of which I could not discover without a repetition of the whole analysis, which want of time prevented.

The following are the results of the analysis of ash from 100 parts of ergot:

Sulphate of lime,	1.184	
Phosphate of magnesia,	0.380	
Sulphate of potash,	0.038	
Carbonate of magnesia,	0.108	
" of soda,	0.554	
" of potash,	1.000	
Total soluble salts,		3.264
Silica,	0.366	
Phosphate of magnesia,	0.187	
" of iron,	0.092	
Loss,	0.531	
Total insoluble salts,		1.176
Amount of ash analysed,		4.440

In thus presenting an analysis of ergot as the subject of a thesis, I may be permitted to add my regrets that I did not succeed in ascertaining the characteristic principle, if there be one. I am

not prepared to say that there is not present an either fixed or volatile alkaloid, for I have reason to believe there is, although I was unsuccessful in obtaining it; but I feel quite confident that if there be, it exists in very minute quantity.

If the assertions made by previous investigators be true, that both the expressed oil, and that obtained by ether and deprived entirely of resinous matter by washing with alcohol, are medicinally inert, such a fact certainly favors the conclusion that the activity of ergot is either due to the resin, (as maintained by both Wiggers and Pardue,) or to an alkaloid.

One of the best published analyses (up to the present time) of ergot seems to have been made by Wiggers, and although at first sight it seems to be very full, a practical examination will show its defects.

As the ergot I examined was of German origin, it was probably of the same general character as that examined by Wiggers. My analysis is confirmatory of his for the most part, but does not agree with it altogether. It appears that the discrepancies exist principally in the minutiæ of analysis, and in the organic part of the investigation. We both obtained the same amount of oil, which has been shown to constitute more than one third of the whole constitution of ergot, and after extracting everything which the different menstrua would bring away, the amount of fungin remaining in each case approximates.

We differ as to the amount of albumen, which I experienced great difficulty in separating completely from the other constituents.

We agree in the description of the oil, except as to its saponification; for his assertion that the oil is not saponifiable, I have shown to be totally incorrect. The solid fat deposited from the oil by repose, he calls cerin.

M. Pardue, who made an examination of ergot, has been guilty of the same error in stating that the oil obtained by ether is not saponifiable, (*Chemical Gazette*, vol. ii .page 495.) This is probably one reason why the chemical constitution of this oil has not been before examined.

Although in the respective analyses of ergot made by Wiggers, Vauquelin, Duhamel, Legrip, Pardue and Bonjean, resin is

treated of, none of them have recognized the presence of more than one resin. Wiggers and Pardue both attribute the medicinal activity of ergot to its presence. They were evidently not aware of the existence of these resins.

M. Pardue's description of the oil after treatment with alcohol, entirely to deprive it of resinous matter, viz: that it has then scarcely any color, a bland, sweet taste, and is medicinally inert, I found to be correct so far as the taste and color are concerned, but I am ignorant of its therapeutical properties.

With regard to the physical nature of ergot, the conclusion drawn from my examination is, that it is a fungus. There is still, however, an open field for the investigation of ergot, but I must, at present, abandon the subject, content with having at least in some degree contracted its limits by my investigation, wishing others success in any similar undertaking.

ON NARCOTIC PLANTS GROWN IN THE UNITED STATES, AND ON THEIR MEDICINAL VALUE COMPARED WITH THOSE OF EUROPEAN GROWTH.

(*Being an Inaugural Thesis presented to the Philadelphia College of Pharmacy.*)

By Alfred Jones.

It is a fact of no small interest to the pharmaceutist of this country, that whilst the plants which furnish the physician with a number of his most important remedial agents, grow in abundance almost at our own doors, he depends for them on a country more than three thousand miles distant. Among these we find Belladonna, Hyoscyamus, Conium, and Digitalis If we attempt to trace this preference to its cause, two questions at once arise. First, is it from a want of care and pharmaceutical skill in the preparation of the medicines for exhibition; and, secondly, is it from our climate not being suited to the full developement of the activity of the plants, or from these two causes combined?

To answer the first question, we must examine the miserable preparations which under the names of "Extract of Conium," etc.,

are thrown into the market in immense quantities from sources which it would be in vain to trace, and at prices, too, which would be perfectly ruinous to responsible manufacturers. We shall find these *extracts* black and opaque, almost insoluble in water, and of an herbaceous, and frequently strongly empyreumatic, in place of a narcotic odor, giving unquestionable evidence of their mode of preparation. Is it strange then, that, while such *trash* constitutes about two thirds of all manufactured in the United States,* the skilful practitioner should look elsewhere for a reliable article.

The second question is one much more difficult of solution, and one, an answer to which I have attempted in the following experiments. The first was with Conium maculatum, obtained at the time of flowering, both in New York and in this State. One was the wild and the other the cultivated plant, but by the eye they could not be distinguished; in size they were but little inferior to a very fine specimen of the foreign herb. On bruising with caustic potassa, the peculiar odor of the alkaloid conia was copiously developed. After the above examination, the leaves were bruised with a small portion of water, subjected to powerful pressure, the same repeated, and after allowing the solid particles contained in the liquors to subside, the whole was inspissated in a vacuum apparatus prepared for the purpose, at a temperature of 115° F., the process being nearly that of the United States Pharmacopœia. The only object in retaining the albumen and chlorophylle, (they being now almost universally admitted to be inert), was to make a more just comparison with the English article in which they are still combined. The extract, when finished, was of a greenish brown color, and in its sensible properties compared favorably with any specimen I could obtain. Equal portions of it, and a preparation, from one of the most celebrated transatlantic laboratories was taken, and after the addition of water, and a small quantity of caustic potassa, half an ounce of liquid was obtained from each by distillation. These distillates had the odor of the plant in a nearly equal degree; but from the small quantity of extract which could be devoted to this experiment, it was found impossible to isolate the alkaloid in any measurable quantity. On

* The excellent quality of the preparations of two or three manufacturers will of course exclude them from this class.

the addition of a solution of tannin, however, precipitates of the tannate of conia were thrown down, which precipitates, after being collected and dried without artificial heat, weighed from the American plant 3, and from the English 3¼ grains.

The effects on the system of the extract from this plant, particularly as an antispasmodic and anodyne, afford still stronger proofs in favor of our own preparation, as being at least equal to that which we import: besides being several times tried in private practice, it was, through the kindness of the resident physicians, substituted for the foreign article in three of our public institutions, and the result carefully noted. In no instance was it found inferior to the preparation before in use, and in one case it was thought to be decidedly more active.

The Belladonna and Hyoscyamus experimented upon were from plants cultivated expressly for the purpose; a rich loose soil was found best suited to their developement, their growth was luxuriant and even rank, reminding one of the stramonium found wild in the neighborhood of this city. The herb was collected during the time of flowering in the second year; the average size of the leaf was in the Hyoscyamus greater, and in the Belladonna about the same as in the English plants; the peculiar odor exhaled by the former, while growing, was so strong as to have a sensible effect on persons remaining for some time near it. An extract was prepared from each in the same manner as from the conium, and it was in this form that their curative powers were tested; the trial was an extended and I believe a thorough one, having been continued for some months. The result as noted by persons intimately acquainted with the action of these medicines, has been even more favorable to the American plants than we could have expected, as in every case in which they were employed, they were found quite as speedy and efficacious in their action as any preparation before in use. The important position which Belladonna now occupies in the treatment of diseases of the eye, from its power of dilating the pupil, induced me to have it separately tried for this purpose. This was effected through the kindness of Dr. McIntyre, of the Wills Hospital, who used it for some time in that institution, without finding it at all inferior to the English extracts heretofore used.

I had hoped to be able to extend these experiments to the Digitalis, and for this purpose set out a number of the plants, but an unfortunate occurrence destroyed them while young, and thus prevented my doing so.

ON CORTEX PRUNI VIRGINIANÆ.

(*Being an Inaugural Essay presented to the Philadelphia College of Pharmacy.*)

By Joseph S. Perot, of Philadelphia.

The tree producing this bark, called by De Candolle, Cerasus serotina, by Michaux, Cerasus Virginiana, is to be found throughout almost all parts of the United States. It is particularly abundant and fully developed in Ohio, Kentucky and Tennessee; and also abounds in Pennsylvania and New Jersey. In some instances it rivals in beauty and magnificence the finest productions of the American forest; but, as usually met with, seldom exceeds 30 or 40 feet in height, with a trunk from 10 to 12 inches in diameter. The general surface of the bark at the first glance appears to be smooth, but on closer inspection is found to be rough and blackish, detaching itself in semicircular plates, which adhere for a time to the tree, previous to dropping off; these are several inches long, from half an inch to two inches in diameter, and become somewhat curved laterally from drying. The foliage, though handsome, is thin compared with that of some of our other trees; the leaves are from two to four inches in length, supported alternately on petioles, serrate, pointed, and of a green color; the flowers are white and appear in spikes. The inner bark is the part employed in medicine.

Among the indigenous plants of the American Continent, there are few whose qualities are more valued or which are more extensively resorted to, both in the regular medical, and also in domestic practice, than the Prunus Virginiana; the following extract from the Dispensatory of Messrs. Wood and Bache will show the reputation in which it is held as a remedial agent.

"This bark is among the most valuable of our indigenous re-

medies. Uniting with a tonic power the property of calming irritation and diminishing nervous excitability, it is admirably adapted to the treatment of diseases in which a debilitated condition of the stomach, or of the system, is united with general or local irritation. When largely taken, it is said to diminish the action of the heart, an effect ascribable to the hydrocyanic acid which it affords. The remedy is highly useful in the hectic fever of scrofula and consumption, in the treatment of which it has long been a favorite with many American practitioners." It is very useful as an ingredient of compounds for the remedy of pulmonary complaints, and has also been resorted to in cases of dyspepsia and in the general debility which often succeeds inflammatory diseases.

This bark being undoubtedly an important article to the physician, I undertook a few experiments with a view towards ascertaining at what season its properties (which depend principally for their efficacy on the amount of prussic acid which it will yield) exist in greatest perfection, and consequently when the bark is best adapted for collection. For this purpose I procured at intervals during the season in which it is brought to market for sale, portions of the inner bark from the same tree, (or from trees of apparently the same age,) and from portions of the largest branches of about the same age, which, being carefully dried and deprived of the epidermis, were bruised, macerated for a short time with water, and distilled in a close vessel; the product was treated with weak solution of nitrate of silver, which, reacting with the prussic acid in the solution, formed a precipitate of cyanide of silver; this being carefully washed, dried and weighed, the quantity of hyodrocyanic acid in each portion of bark was estimated by the ratio of chemical equivalents. The distillate was also treated with a strong alkaline solution, and afterwards with a weak solution of nitrate of silver in the manner proposed by M. Liebig, (See American Journal of Pharmacy, vol. xxiii. page 253) but the results coinciding very closely with those obtained by the former process, it was deemed unnecessary to enumerate them.

The results obtained from these experiments, with the dates at which the bark was collected, may be seen by the following statement.

1000 grains of	Bark	collected	April 1st, 1851,	yielded	.478	grs.	Pruss.	acid
1000	"	"	May 20th	"	.856	"	"	
1000	"	"	June 18th	"	1.007	"	"	
1000	"	"	August 28th	"	1.134	"	"	
1000	"	"	October 16th	"	1.436	"	"	

The bark used in the preceding experiments was taken from a flourishing tree in Philadelphia county.

1000 grains of bark collected May 23d, from the trunk of a tree in Jersey, yielded .876 grains of prussic acid.

1000 grains collected June 13th, from the trunk of the same tree, yielded 1.159 grains.

In order to ascertain how the bark which has been kept on hand for a length of time compares with that freshly collected, I made an experiment about the middle of October upon some bark which had been collected during the previous spring, and found 1000 grains to yield .567 grains of prussic acid.

It being the opinion of several eminent members of the medical profession, that this bark contained also phloridzin, a principle known to exist in the bark of the apple and of some other fruit trees, to the possession of which they supposed its tonic property might be owing, I made a number of experiments in the manner directed for the preparation of phloridzin, both upon old specimens of bark, upon fresh bark of the branches and trunk of the tree, and upon fresh bark taken from the root under ground, at several successive times, but in all instances failed completely to detect any indications whatever of the principle sought.

ON THE PREPARATION OF MERCURIAL OINTMENT.

Mount Holly, Jan. 22, 1852.

To the Editor of the American Journal of Pharmacy:

Dear Sir:—Some years since my attention was directed to some improved, or at least more economical way of making mercurial ointment, than that directed in the Pharm. of the U. S., and the Dispensatory of Wood and Bache, from the fact of its being very tedious and laborious; connected with which the un-

pleasantness of having it about the shop during the operation of rubbing or triturating in a mortar.

I resolved to adopt some labor-saving method, which was put into operation and succeeded beyond my expectations. Specimens were submitted to several persons, among whom was Daniel B. Smith of your city, and it met the unqualified approval of every one. Subsequently I sent to Dr. G. B. Wood my mode of operating, who, in reply, requested I would communicate the same to you, which I herewith annex. My mode of preparing it, has been to use neats foot oil, and after forming the mixture with the mercury, to add suet to bring it to a proper consistency. Dr. Wood suggested another formula, which is to use lard oil, then to add stearine in proper proportions. I have no doubt but the latter would be equally good with the former, but perhaps no better for the desired purpose. The proportions of oil and suet, or stearine, may be varied to suit the climate and the season.

Take of mercury any quantity—of oil, say one-third or one-half as much—put them into a stone bottle or jug of capacity sufficient to hold three or four times the bulk of the mixture; having securely wired the cork, attach the bottle to the saw-gate of a saw mill, (any other quick vertical motion may be adopted,) the mixture is there submitted to continual agitation for three days; at the expiration of which time it will be found to be perfectly incorporated, and without the minutest globules of mercury being discernible. To this mixture add sufficient of suet or stearine to equal—with the oil already used—the quantity of mercury. The suet should be melted, then mixed, and stirred until cold.

If the above is worthy your attention, you are at liberty to make such use of it as you may think proper. One thing is certain, in making the ointment, you always know that you have it of the proper strength, which is not equally so when bought from others.

I remain, very respectfully, yours, &c., PETER V. COPPUCK.

[NOTE.—We see no objection to the process of our correspondent, on a small scale, except that the kind of motion described will not be found in the vicinity of most stores, which gives it but a local value. The suggestions of Fosembras and Simonin, (See U. S. Dispensatory,) to use a little oxidized lard, (or what is better, in my experience, an ounce of *old simple cerate*,) in lieu of the suet, will be found universally convenient by those who wish to prepare this ointment quickly and well. Any objection on the ground of the rancid cerate is more apparent than real.—ED. AMER. JOUR. PHARM.]

HYDRARGYRI IODIDUM RUBRUM.

NEW YORK, Feb. 10th, 1852.

Editor of the American Journal of Pharmacy;

Sir:—Under the article, Hydrargyri Biniodidum, the U. S. Dispensatory gives as the dose 1-16th of a grain, gradually increased to grain 1-4th.

Under the same head, Christison's work, edited by Dr. Griffith, ed. 1848, gives the dose from *gr. i.* to *gr. iv.*

Has this great discrepancy been before detected, and the error corrected? STUDENT.

[NOTE.—The Profession will be obliged by the above hint. We had not observed the error before. Since communicating the fact to the Publishers, Messrs. Blanchard & Lea, they have informed us that the error has been corrected in the unsold portion of the edition. All who have the American Edition of Christison should make the correction with pen at once, and all Medical Journals should notice it.—ED. AM. JOUR. PHARM.]

REPORT ON SOLUBLE CITRATE OF MAGNESIA.

BY EDWARD PARRISH AND AMBROSE SMITH.

(*Read at the Pharmaceutical Meeting held February 2d*, 1852.)

At the last Pharmaceutical Meeting the subject of a new method of preparing Citrate of Magnesia, in the solid form, so as to be quite soluble, having been introduced to notice by one of the undersigned, it was thought deserving of further attention, and was accordingly referred to us for examination.

Our knowledge of this method is derived from *L'Officine*, a recent French work on Pharmacy, by Dorvault, which belongs to the College Library, and has already been noticed in the Journal.

This work being in a foreign language and not generally accessible, we have translated and here insert the most important part of the article on the citrate previous to giving our own experiments and conclusions.

After relating the history of the discovery and introduction of the magnesia lemonade, or, as we call it, the solution of citrate of magnesia, the author proceeds: "Until now, no satisfactory pro-

cess has been published for obtaining citrate of magnesia solid and perfectly soluble. We present one which is our own, and which is perfectly successful. It is very simple.

Take of Crystallized Citric Acid,	100	parts.
Calcined Magnesia,	29	"
Water,	10	"

Dissolve the acid with the water, then gradually add the magnesia; or better, omit the water, and on a sand bath melt the acid in its water of crystallization, and thoroughly incorporate the magnesia with it. In either case we obtain a mixture of a pasty consistence, which soons hardens, and may be pulverised for use.

"The citrate thus prepared is neutral, and yet very soluble even in twice its weight of water. But from so concentrated a solution it soon precipitates as a hydrate, which is insoluble even in a large quantity of water. Dissolved in a certain quantity (say 8 or 10 times its weight) of water, its solution is permanent. We call it *Citrate de Magnésia officinal.**

" The 29 parts of oxide of magnesium may be replaced by 64 parts of hydro carbonate of that base. In this case the reaction is accompanied by a disengagement of carbonic acid, and the product is light, porous, white, and has the aspect of bicarbonate of soda before being powdered. It is rather insipid; if an agreeable acidity is desired, the proportion of acid as above should be augmented 4 parts."

Your Committee have prepared the salt by the above processes, and submit samples of it herewith. It will be remarked, that instead of being neutral and insipid as described they have a more or less acid taste, and a decided acid reaction with litmus. The solution which is made from it by a formula to be given presently, is about as acid as that usually sold in the shops and directed by the Pharmacopœia.

The formula does not agree exactly with the proportion generally employed to form a solution of the neutral salt. Viewing citric acid as a tribasic acid, containing 1 equivalent of water of crystallization, (C_{12} H_5 O_{11}, 3HO,) HO, its combining number would be 201; while that of magnesia is 20; hence the salt (3MgO, $\overline{Ci}$,)

* The term officinal in French is equivalent to our word permanent or ready-made, as contradistinguished from extemporaneous.

would require the employment of 201 parts of citric acid to 60 of magnesia. The citric acid employed by Dorvault must be that expressed by the formula, (C_{12} H_5 O_{11}, 3HO) 2HO, which is obtained by precipitation from a hot solution, and which it is believed is rarely met with in our shops. Moreover, we must not overlook the fact that the best calcined magnesia of commerce is always more or less hydrated, and contains traces of carbonic acid. That used in preparing the accompanying specimens, a fair commercial article, was carefully examined. It effervesced on the addition of acid, and 50 grains thoroughly calcined in a platina crucible over a counter blow pipe, and weighed immediately, lost 4·5 grains, equal to 9 per cent.

From these discrepancies, both in regard to the acid and base, we are led to suggest the following proportions, as more nearly representing the actual equivalents.

Take of Citric Acid Crystallized,	100 grains.
Calcined Magnesia,	35 "
Water,	15 drops.

Proceed as in the other case.

By the use of these proportions, the 5 additional drops of water being rendered necessary from the fact of the citric acid containing only one equivalent of water of crystallization instead of 2, we should very readily prepare the neutral and soluble citrate, but for a practical difficulty arising out of the great comparative bulk of the magnesia, and the very small quantity of the liquid to absorb and combine with it. A portion of magnesia is almost unavoidably left uncombined, hence the acidity of the salt, and being mechanically mixed with the salt, it remains suspended when thrown into water, and gives it the appearance of partial insolubility. To obviate this last difficulty, the mass, when first taken from the capsule, and while passing into the brittle and pulverulent condition, should be dusted of all the adhering magnesia before being powdered. The heavy and very fine magnesia of C. Ellis & Co. was tried, but the combination was less complete than with the light magnesia of commerce. The action was so immediate and violent, that a portion of the magnesia was enveloped in the pasty mass without coming fully into contact with the fused acid, thus producing a very acid salt mixed with uncombined magnesia.

Equivalent portions of the crystallized acid reduced to powder, and calcined magnesia, were thoroughly triturated together, moistened with water into a paste, and heat applied until the combination ceased, and it was nearly dry. In this way a neutral citrate may be prepared, by mixing about 34 parts of magnesia with 100 parts of citric acid, adding enough water to make the mixture pasty, and drying immediately in the evaporating dish over the fire, constantly stirring. This method, with the observance of certain precautions which will be indicated by experience, will probably be found most convenient in practice. In our experiments, however, though sometimes succeeding, it frequently failed. When the water is added to the mixed powders heat is generated, and frequently the water appeared to combine immediately with a portion of the powder, which became hard and lumpy, making it impossible to moisten the whole of it, without adding considerable additional water; when this occurred, the resulting citrate was always more or less insoluble.

One difficulty in the preparation of the soluble salt is the necessity of properly regulating the heat; as a water bath heat is insufficient, recourse must he had to a direct application of heat, or to a sand bath, in either of which the heat is liable to be too high, and without great care will decompose the citric acid, and spoil the salt. Neither is it desirable to prolong the application of heat to the acid after it is fused, before adding the magnesia, as it then loses a portion of its water of crystallization. Care should be taken to remove the mass from the fire before it is in any degree decomposed, and yet it should be so dry as to pass in a few minutes into a hard and rather brittle condition.

A specimen is herewith presented of citric acid deprived of its water of crystallization, which we prepared by the long continued application of a carefully regulated heat to the crystallized acid. There is great danger of decomposition in this process.

The acid thus prepared is a nearly white amorphous pulverulent soluble substance, supposed to possess the chemical affinities of of the acid in an increased degree. It was mixed with an equivalent portion of magnesia and thrown into water with a view to the formation of the salt extemporaneously, but without success. A specimen of this mixture is presented.

In conclusion, we would express the belief that the soluble citrate of magnesia, although not calculated to supercede the effervescing solution now in use, when that can be readily obtained, is a useful and valuable addition to the materia medica.

Though as obtained by us in the course of our somewhat hurried experiments, it contains a small excess of the acid, there can be little doubt that further experience will enable us to produce it more nearly neutral, a desideratum less important from the fact that a small excess of acid improves its taste, without materially interfering with its therapeutical applications. The dose of the salt is generally stated at one ounce.

Its advantages may be thus summed up:

1st. It will keep, as far as we know, without losing its properties.

2d. It is portable, a dose occupying about 1-10th the bulk of a dose of the solution.

3d. It is more readily divided into large or small quantities to suit the means and wants of purchasers.

4th. It may be readily incorporated with other substances in prescription without materially increasing their bulk.

5th. It may be employed to make the solution extemporaneously, so as at at all times to have it fresh, by the following formula:

Take of Soluble Citrate of Magnesia,	1 ounce.
Water,	8 fluid ounces.

Make a solution, transfer to a suitable bottle, and add

Syrup,	1½ fluid ounces.
Bicarbonate of Potassa,	40 grains.

Cork immediately and securely,

If the citrate is neutral it will require the addition of a portion of citric acid, or the employment of lemon syrup. It may be flavored to suit the taste. A specimen is presented prepared as above.

OBSERVATIONS ON THE CULTIVATION OF THE POPPY AND THE MANUFACTURE OF OPIUM IN BRITISH INDIA, MORE ESPECIALLY AT BENARES, TAKEN CHIEFLY FROM A REPORT TO THE BENGAL GOVERNMENT.

By W. C. B. Eatwell, M. D., of Calcutta.

[The following interesting account of the Opium culture and manufacture, under the direction of the East India Company, has been carefully abridged from a Report by Dr. Eatwell, First Assistant and Opium Examiner at Calcutta; and the illustrations are from a paper on the same subject by the Editor of the Pharmaceutical Journal, (which were taken from paintings in the Great Exhibition accompanying the deposit of this branch of industry by the East India Company,) in which work they were published in the numbers from Nov. to Feb. inclusive. The intrinsic interest of the paper is our only apology for its great length even in its condensed form.—*Ed. Amer. Journ. Pharm.*]

The cultivation of the poppy in British India is confined to the large central Gangetic tract, about 600 miles in length and 200 in breadth, which is bounded north and south by Goruckpore and Hazareebaugh, and east and west by Dingepore and Agra.

This large extent of country is divided into two agencies, the Behar and the Benares, each presided over by an Agent; that of Behar at Patna, that of Benares at Ghazeepore. There is a central factory at each agency. The control of the entire department is vested in the Board of Customs, Salt, and Opium at Calcutta. The Behar agency produces three times more opium than that of Benares.

The Benares agency comprises eight divisions, the aggregate amount of land under poppy cultivation in which, during the season 1849–50, was 107,823 Beegahs (3025 square yards each.)

Each division is under the management of a sub-deputy opium agent, who resides at a central factory, at which the produce of his division is collected and forwarded to the Sudder factory at Ghazeepore.

All correspondence between the agent and sub-deputy agent, passes through the hands of the deputy opium agent, who, besides being answerable to the agent for monies expended by the sub-deputies, is charged with the investigation of all suits which may arise out of matters connected with the department; and whilst

upholding the sub-officers, is bound to see justice done to the cultivators when imposed upon. As the duties of the sub-deputy agency are numerous, there are a number of subordinates called *gomashtas*, each of which has a special district, called *kotee illaqua*, of such extent that he can give personal care to the operations conducted in it. The head quarters of the gomashta is called the *kotee*, which is built in a central position, and contains his treasury, under the custody of a *tehvildar* and his accountants.

The sub-deputy agent having concluded his agreements with the cultivators, it is the gomashta's duty to measure out the land according to the contracts. His further duty is to pay the cultivators of his illaqua their advances, and to receive and weigh their produce, for the safe delivery of which at the factory at Ghazeepore, he is held responsible. The gomashta has also under his direction subordinates called *jemadars* and *zilladars*, who personally overlook the cultivators in every stage of the culture. There is also in each division a general officer called a *mohotomim*, who, by keeping a supervision of all that happens, acts as a check to the sub-deputy and his assistant. Some idea may be gained of the extent of the Benares agency when it requires near 150 first class officers, and 1200 subordinates, in constant employ, and a much larger number in the manufacturing season at the factories.

Of the cultivators, there were in 1849–50 no less than 21,549 *lumberders* or contractors, and 106,147 laborers, not to speak of the families of the latter who are more or less interested in the business.

So well regulated are the affairs of the agency, that all works smoothly; the officers have clearly defined duties, the cultivators have justice done them, and are not compelled to work except as they contract with the lumberders, who in turn are bound by an agreement written in Hindee called a *hath chittee*, which sets forth the contract and the penalty of its infringement. This document contains the names of the lumberder and his laborers, the quantity of land each agrees to cultivate, the gomashtas' measurements, the receipts for monies received, the weight and consistence of all opium delivered, and its value. Hence, when the lumberders make their final settlement with the sub-deputy agent in person, the hath chittee enables that officer to see at a glance the condition of

each account. To enable the contractors to go on with their operations, money advances are made from time to time equal in all to one half of the average produce. The first advance is made on completing the agreement in September, the second after the sowings in November, and the final, or *chooktee* payment, is made on the delivery and weighment of the produce. This arrangement is very fair for the cultivators, and it is a rule that the accounts of one season must be settled before any new contract is began. When the cultivators behave fraudulently in reference to advances, they are at once prosecuted; but if their default is from calamity unavoidable, the debt is generally placed in the profit and loss account. The fairness of the system is manifested by the readiness with which the natives engage in the service.

Lands are selected for poppy cultivation in the vicinity of villages, where facilities for manuring and irrigation are greatest. When the soil is rich in such situations, a crop of maize or vegetables is taken off in the rainy season previous to the preparation of the ground for the poppy crop in September. When the soil is poor, no extra crop is raised; and from July to October the ground is dressed, cleaned and manured as much as possible, and in October, just before the sowing, is ploughed and rolled.

The land produces very differently. Under favorable circumstances, as much as 12 or 13 seers (26 lbs.) of opium is yielded by each Beegah (3,025 square yards) of land; in unfavorable seasons only 3 or 4 to 6 or 8 seers.

The chemical examination of soils, in connection with their opium producing powers, presents a field for profitable and interesting enquiry; nor is the least important part that which has reference to variation in the proportions of the alkaloids (morphia and narcotina,) which occur in the opium of various localities. That atmospheric causes are influential is probable; that they influence the *amount* of the product and its physical appearance, are facts well known to every cultivator. Thus, dews facilitate the flow of juice, increase its quantity, but render it darker and more liquid. An easterly, damp wind, retards the flow of juice and renders it dark and liquid. A moderate westerly wind, with dew at night, form the conditions most favorable for collections, both as regards quantity and quality. If this wind (which is very

dry) blows violently, the exudation is sparing. Whilst these effects are well marked and traced to meteorological influences, the causes of variations in the chemical constitution of the products are more obscure; but it is probable that the causes mentioned in connection with variable soils, are chiefly influential.

Dr. O'Shaughnessy found the morphia in eight specimens of Behar opium to vary from $1\frac{3}{4}$ to $3\frac{1}{2}$ per cent. and the narcotina from $\frac{3}{4}$ to $3\frac{1}{2}$ per cent., the consistence of the opium varying from 75 to 79. Opium from the Hazareebaugh district yielded $4\frac{1}{4}$ per cent. of morphia and 4 of narcotina, (the consistence being 77,) whilst a specimen of garden Patna opium afforded $10\frac{3}{4}$ per cent. morphia and 6 per cent. of narcotina, the consistency being 87. It is to be regretted that the soils which produced these specimens were not analysed. The climate in which the garden Patna opium was produced, was precisely the same as that influencing the production of the poorer specimens, and therefore could not have exerted much influence in their variations.

The white poppy only is cultivated in the Benares and Behar plantations. In situations favorable to its growth, it vegetates luxuriantly, attaining usually a height of four feet. The stem is branched and terminated by from two to five ovate globose capsules, averaging in size a duck's egg. (See fig. 2.) The plant requires $3\frac{1}{2}$ months to reach maturity, and is exclusively cultivated in the cool season from November to March. The seed are changed every two or three years, and certain districts that produce them of superior quality, yield supplies to less favored localities.

The soil having been prepared as described, the seed are sown broad-cast between the 1st and 15th of November. In three or four days the land is ploughed to bury the seed and then rolled. The whole surface is then divided into squares of ten feet, between which are channels for irrigation. In ordinary seasons two, and in dry seasons five or six irrigations are necessary. Germination ensues in ten or twelve days, and after the plants are two or three inches high, they are carefully weeded and thinned. The growth of the poppy is liable to injury from frost, from being stunted owing to late re-planting, or from excessive heat and deficient moisture. Blight and parasitical plants, (especially the Orobanche Indica,) also in some cases cause injury.

Fig. 1.

Native woman gathering poppy petals.

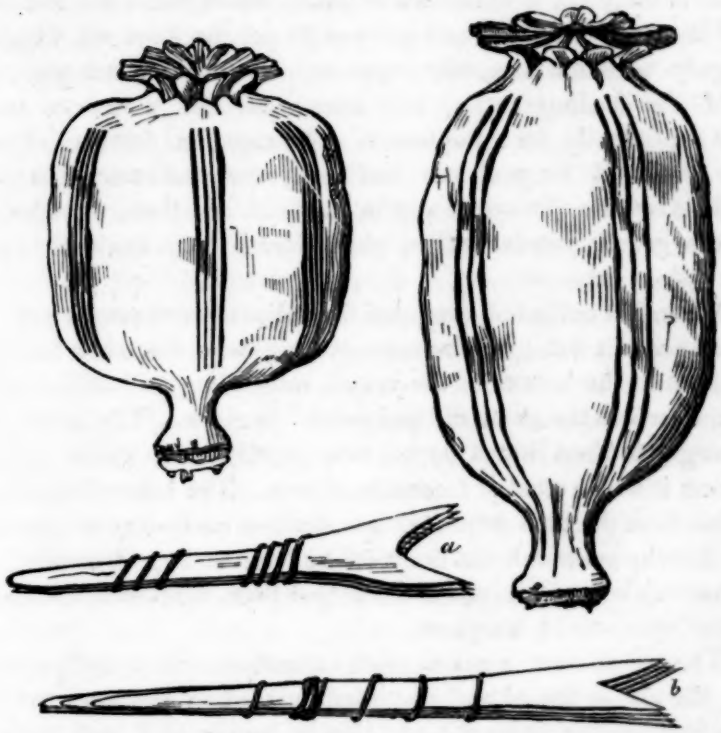
In February, the plant is generally in full flower, and towards the 15th the petals are carefully stripped off and collected, (see figure 1,) and subsequently formed into circular cakes, ten to fourteen inches in diameter by 1-16th thick, by placing them in layers, in a flat earthen vessel, moderately heated, so as to wilt them and extract a glutinous juice, which causes their adherence, one layer being added after another and pressed till the cake is completed. These cakes, which are technically called "leaves," are of different qualities, and are used in the formation of the shells for opium cakes.

In a few days after the removal of the petals, the capsules have attained their utmost development, when the process of collection commences, and extends from February 22d to March 25th.

The juice is collected thus:—At about three or four o'clock in the afternoon, the laborers repair to the fields and scarify the poppy capsules with sharp instruments called *nushters*. The nushter (see *a*, *b*, fig. 2,) consists of three or four narrow iron bars from three to six inches long, and of the thickness of a pen-knife blade, deeply notched at one end, and narrow at the other. The points constituting the notch are ground sharp, and constitute the cutting edges. The bars are bound together by cotton thread, which, by passing between, keeps the edges 1-16th of an inch apart; and when complete, the instrument presents fine cutting points on each side.

In using the nushter, only one set of points is employed at a time, the capsule being scarified longitudinally from base to summit, as in the figure. The blades only penetrate the pericarp, and do no not cut into the cavity of the seed vessels. The line of scarification is chosen along the lateral prominences of the capsule marking the attachment of the internal dissepiments, because of a horizontal section be made of a growing poppy head, the

Fig. 2.

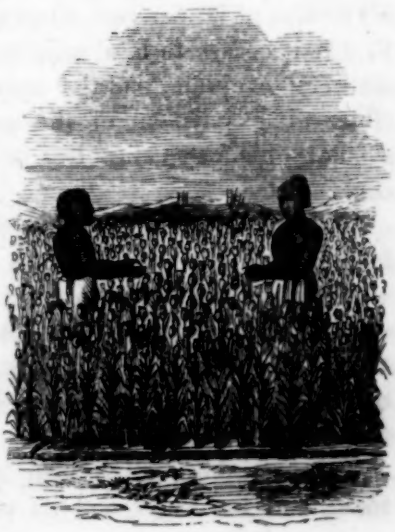


Poppy heads and nushters, (natural size.)

The poppy heads have been scarified juice will be seen to exude most from those points, owing to the much greater size of the vessels. Each capsule is scarified from two to six times according to its dimensions, with an interval between the operation of from two to three days.

Early on the following morning the collectors, provided with instruments called *seetooahs*, which are shaped like a small concave trowel, proceed from plant to plant, until the cavity is full, when they empty it into an earthen pot slung their sides.

Fig. 3.



Natives engaged in scraping off the exuded juice.

After the plant is exhausted of juice, the capsules are removed, and the seed extracted and pressed to get the fixed oil, which is largely used for domestic purposes. The cake left is generally used for feeding cattle, but sometimes for a coarse bread, and medicinally for cataplasms. The capsules, deprived of seed, are also used for poultices and anodyne decoctions. The stems and leaves are allowed to dry in the field, and then, when broken into a coarse powder called 'poppy trash' they are used to pack the opium cakes.

When first collected, the juice from the capsules presents the appearance of a wet, granular mass, of a pinkish color, and a dark fluid collects in the bottom of the vessel, resembling an infusion of coffee, to which the name of "pussewah" is given. The recent juice strongly reddens litmus paper, acts rapidly on metallic iron and covers it with a crust of meconate of iron. The juice when brought home from the field is placed in a shallow earthen vessel, inclined so that the pussewah can drain off as long as any separates. The pussewah is set aside, and at the proper time, is taken to the Ghazepore factory to be weighed.

The opium now requires much attention. It is daily exposed to the air in the shade, is turned over every few days to render the inspissation uniform; and this is continued 3 or 4 weeks, or until the drug has reached nearly the standard degree of dryness. Standard opium according to the Benares regulations, will yield a dry residue of 70 per cent when subjected to a temperature of 200° F., till it ceases to lose weight. This is the consistency of the marketable opium, and the agents adhere as closely to it as possible. The payment of the cultivator is regulated also by this standard, his pay being less or more as the drug is less or more concentrated.

The opium on its arrival at the Ghazeepore factory, is emptied from the earthen pots in which it is received; and is weighed in wide tin vessels called *tagers*, care being taken that no larger quantity than 10 seers (20 lbs.) is brought to the scale at one time. The weighing is witnessed by the gomashta (or his agent) of the kotee to which the opium belongs, and in neighboring kotees the cultivators also attend.

This weighing is verified by an European officer in another room, and the tager and its contents is passed in to a table at

which the opium examiner, and a native opium examiner, called the *purkhea* are seated. The purkhea now plunges his hand into the centre and to the bottom of the vessel, stirs about its contents, feels in various directions for impurities, and then withdraws a handful, which he manipulates between his fingers to reveal its color, texture and fracture, and finally its aroma. He then throws a small portion on a plate and estimates its consistence by judgment. This estimate is written on a ticket by the European officer and is sent with the specimen to the laboratory, where an actual, evaporating and weighing trial determines its real value, which rarely differs more than one or two per cent. from the purkhea's guess. The examiner can pass nearly 2000 specimens daily. The quantity of passewah which the opium contains is carefully noted, and a fine is levied according to its excess, because it injures the physical qualities of the drug.

The *tactus eruditus* possessed by the purkhea is very remarkable, he rarely fails to detect even small quantities of the grosser impurities, and is no less delicately alive to the slightest variations in color and smell. Should a specimen appear adulterated, it is at once set aside for the opium examiner, who reports specially concerning it to the agent, who, if the case is flagrant, confiscates and destroys it to the absolute loss of the cultivators. If the adulteration is only moderate, the price paid is but one half, or in lieu, a penalty is exacted, and the opium is employed to make the *lewah*, a paste used in forming the shells of the opium cakes. These precautions prevent the practice of adulteration in great measure, but a small number of confiscations being annually made. The nature of adulterations is very various. The grosser kind to increase the weight are mud, sand, powdered charcoal, soot, cowdung, powdered poppy petals, and powdered seeds of various plants. All these substances are easily discovered by maceration in water. Flour is a very favorite sophistication, but opium so adulterated becomes sour, and its fracture and consistence much altered. The iodine test easily detects it. The farina of boiled potato, as well as ghee and goor, (impure treacle,) are occasionally used, but the purkhea detects them by odor and consistence. Besides these, various vegetable juices, extracts, pulps, and coloring matters, are occasionally mixed with the opium; such as the inspissated juice of the prickly pear, (Cactus dilenii,) extracts of the

tobacco plant, the stramonium and the Indian hemp, &c.; gummy exudations are used, the pulps of tamarind and of the bale fruit (ægle marmelos) are employed, whilst catechu, turmeric, and the flowers of the mowha tree (Bassia latifolia) are added to impart color.

The complex constitution of opium precludes the idea of a single test for revealing its purity; *morphiometry*, though the most accurate, is too tedious to be resorted to as a general rule; moreover, the commercial criteria of color, odor and texture, are considered more important than narcotic strength by the dealers, and excellent opium is sometimes condemned, when from some fault in preparing, it merely lacks those sensible qualities. Such opium is used in making *lewah*, and the cultivator is fined. The color of well-prepared opium is a deep dull brown when viewed in mass, which becomes a bright chestnut brown when a small portion of the drug is spread in a thin layer on a white surface; it adheres to the finger, may be drawn out to a moderate extent, and breaks with a ragged fracture; the presence of much pussewah renders it glutinous and more ductile.

Its smell is perfectly *sui generis* and not unpleasant, and in the recent drug somewhat fruity. It breaks down readily in cold water in curdy flakes, which gradually subside, leaving a deep brownish-yellow colored supernatant liquid. When malaxated under water, though first adhering to the fingers, it soon separates, whilst if gum, or the juice of the Ficus Indica be present, it adheres strongly. Diacetate of lead added to the clear infusion separates an abundant flocculent precipitate of meconate of lead. Ammonia throws down a similarly abundant precipitate composed of resin and the alkaloids which speedily becomes black by exposure. The tinctures of iodine and sesquichloride of iron each precipitate the infusion brick red. These tests are applied in a few moments, and the comparative bulk of the precipitate enables the examiner to form a rude estimate of the value of the specimens, especially when adulterations have been practised. A solution of gelatin, and alcohol for the precipitation of tannin and gum, are the only other chemical tests resorted to.

After having been duly weighed in store, the opium receives but little treatment in the factory. It is kept in large wooden boxes capable of containing about 10 cwt. each, in which it

is (if below the manufacturing standard) occasionally stirred up from the bottom until it has acquired the necessary consistence. Whilst exposed in these boxes it soon becomes covered with a thin blackish crust (ulmin,) and deepens in color. Should the consistence be very low, it is put in shallow wooden vessels, and turned up frequently until it approximates 70 per cent. From the general store or malkhana, the drug is exported daily in quantities equalling 179 cwt., for being manufactured into balls or "*cakes*" as they are termed in the department. The officers aim at getting the opium at or very near the standard for exportation; and in case it should be too concentrated, send separately a portion of opium of low consistence.

Before the process of caking, the opium is removed from the boxes, having been previously assayed to determine its consistence etc., when it is again removed to large wooden vats 20 feet long, 3½ feet wide, and 1¼ feet deep, situated in the caking room. In these vats it undergoes a thorough kneading by men who wade knee deep through the opium from one end of the vats to the other, until their contents appear to be of uniform consistence. Two specimens from each vat are assayed, and if of the proper factory standard, caking immediately commences.

Fig. 4.

The process of opium cake making.

Down either side of the room in which the vats are placed, the cake makers are ranged, numbering usually about 110 individuals; each man being seated on a wooden stand, and furnished with a brass cup, forming the half of a hollow sphere, and with another tin vessel graduated to hold a certain quantity. On the previous evening the leaves requisite for forming the shells of the cakes have been weighed out, and tied in bundles of a fixed weight, and have been damped to render them supple. Down the centre of the room small scales are arranged for weighing the quantity of opium for each cake separately, and beside the scales are boxes

filled with *lewah* for the agglutination of the leaves, which form the shells of the cakes. In preparing the lewah, all the inferior opium and the pussewah are used, together with a considerable portion of good opium. These are broken down in the washings of the various vessels that have contained opium, and a semi-fluid paste formed of such consistence that 100 grains will yield 53 grains of residue by evaporation to dryness.

Matters being thus arranged, the cake maker having received from the lewah box a certain measure of the paste, commences to rapidly form within the brass cup the lower segment of the shell with the leaves at his side, pasting leaf over leaf until the thickness of half an inch is obtained, allowing a portion of the external leaves to hang down over the sides of the cup. A boy is in waiting with the opium to be put into the cake, which he has just brought from the scales, and which he throws into the shell. The cake maker, holding the opium away from the sides of the shell with the left hand, then tucks in around the side, leaf after leaf, well smeared with lewah, imbricating one over the other until he has completed the entire circle; the loose ends of the leaves are now tightly drawn up and, the opium well compressed in its leafy bag.

The opening at the top is then speedily closed by applying leaf after leaf, and finally a single leaf, well pasted, is applied to the entire top, and completes the cake. As thus formed the well finished cake is a regular sphere about the size of a 24lb. shot. It is now rolled in poppy trash, is placed in an earthen cup of the same size and shape as the brass cup, and in this way exposed out of doors to the direct influence of the sun during three days, frequently turned and examined, and if it should become distended and puffy, it is torn open, the gas liberated and again tightly closed.

On the third evening, still contained in the cup, the cakes are placed on frames of open battens, so as to allow a free circulation of air. A single man will on the average make 70 cakes a day, but occasionally 90 to 100 are turned out between 9 o'clock A. M. and 3 o'clock P. M. The daily production in the factory during the season is 6500 to 7000 cakes, and during the present season, (1850) 426,800 have been made.

By the end of July, the manufacturing is finished, but much attention has to be given to the cakes, by turning them in their cups, and removing mildew as it collects by rolling them in poppy trash. When the shells prove defective they are strengthened by additional leaves.

The following is the regulated composition of the cakes by weight: standard opium, 1 seer 10 chks.; standard opium converted into lewah, 4 chks.; leaves, 5½ chks.; total, 2 seers 3½ chks. By October the cakes, having become dry to the touch and quite solid, are packed in chests, furnished with a double tier of wood partitions, each presenting 20 squares. In these, the cakes are packed securely, surrounded by dry poppy trash. The shell of the opium cake, apparently so fragile, acquires by time great solidity and strength, especially after the moisture of the interior ceases to pass outward and dampen it.

The above described process of manufacture applies to opium put up for the China market, and it includes the great bulk of the production. The drug intended for home consumption is differently treated. It is called *abkaree* opium. The opium is exposed to the sun until it acquires the consistence of 90 per cent., and has the consistence and firmness of wax. It is then made into rectangular brick shaped masses of one *seer* (2lbs.) each, which are separately wrapped in oiled Nepaul paper, and packed in boxes furnished with compartments for their reception. Abkaree opium has not the powerful aroma of the ball of opium, but it is more powerful, and more easily packed.

When the opium season is concluded, the magistrate of Ghazeepore selects six cakes promiscuously from the provision, for examination and analysis by the opium examiners of Calcutta, the Behar agency, and the Benares agency, who ascertain the following points, viz. 1st. The gross weight of the cake. 2d. The weight of the shell separated from its contents. 3d. The weight of the contents. 4th. The condition of the shell. 5th. Physical character of the drug. 6th. Its consistence. 7th. Its yield of extract to cold distilled water. 8th. The quantity of morphia present. 9th. The quantity of narcotina. The following table exhibits the chemical results of four seasons, two cakes of each season being examined. The reader may draw the average.

Season.	Percent of Dry Opium	Percent. yield to cold water.	Pecent. of Morphia.	Percent. of Narcotina.
1845–46	73 and 75	52.33 and 50.26	2.76 and 2.30	5.33 and 5.20
1846–47	72 " 72	43.25 " 42.25	2.46 " 2.30	4,30 " 4.75
1847–48	71 " 70	44.43 " 39.26	2.23 " 2.17	5.66 " 5.70
1848–49	75·5 75.5	47.37 " 48.62	2.75 " 3.67	3.85 " 4.27

The chief chemical difference between Bengal and Turkey opium, is the large proportion of narcotina in the former, compared with the morphia, which the table shows to be constant in all seasons. Does the treatment of the juice during its preparation influence the amount and proportion of the alkaloids? In Turkey the juice is beaten up with saliva, in Malwa it is immersed in linseed oil as collected, whilst in Bengal it is merely dried in the shade, the watery part being drained off.

The following results I obtained from the analysis of recent juice collected in February, 1850, and from which none of the pussewah was separated.

I. Analysis of 2000 grains of juice, on the day of collection;

Morphia, ...	11.1 grains.
Narcotina, ...	32.7 "
Other matters soluble in alcohol, codeia, narceia, meconic acid, resin, etc., ...	521.0 "
Dry marc, insoluble in alcohol, lignin, caoutchouc, etc.	225.2 "
Water and volatile matter separable at heat of 200° F.	1210.0 "
Total,	2000.0

II. In the following experiment, the juice instead of being analysed at once, was exposed in a capsule at 200° F., until it reached about the factory consistence, and of this 1000 grains was taken.

Morphia, ...	24.9 grains.
Narcotina, ...	30.9 "
Other matters soluble in alcohol, codeia, narceia, meconic acid, resin, etc., ...	546.7 "
Dry marc insoluble in alcohol, lignin, caoutchouc, etc.	215.0 "
Water and volatile matter separable at 200° F., .	182.5 "
Total,	1000.0

III. Juice collected on the 23d of February, was exposed in a

capsule till the 7th of May, with occasional stirring, when it had acquired the consistence of 90.3 per cent., and 1000 parts was then analysed.

Morphia,	26.1	grains.
Narcotina,	32.8	"
Other matters soluble in alcohol, codeia, narceia, meconic acid, resin, etc.,	630.4	"
Dry marc insoluble in alcohol, lignin, caoutchouc,	213.7	"
Water and volatile matter separable at 200° F.,	97.0	"
Total,	1000.0	"

The following table represents the results of the above analyses rendered parallel by reducing the products examined to the same state of dryness by calculation.

	I.	II.	III.
Morphia,	1.405	3.061	2.890
Narcotina,	4.012	3.795	3.632
Matters soluble in alcohol,	65.949	66.874	69.811
Dry marc insoluble in alcohol,	28.506	26.301	23.665
Total,	99.872	100.031	99.998

From these experiments it would appear that the unexposed juice yields less morphia, and more narcotina, than that which has been inspissated. The question naturally suggests itself, does narcotina under the influence of the exposure of drying or evaporation, by losing a portion of its elements, become changed into morphia? The proposition is a mere speculation, which could only be satisfactorily demonstrated by a careful set of minute experiments made during all stages of the process, from the extraction of the juice, to the completion of the opium.

I have already spoken of pussewah, and now propose to treat of it more fully. It is the drainings from the recent coagulated juice, and is brought to the factory in all degrees of consistence, from a thin fluid to that of thick treacle. Recently collected, it is a dark fluid resembling strong infusion of coffee, with a peculiar smell. It reddens litmus paper strongly; a solution of diacetate of lead and lime water both precipitate it copiously, as also does ammonia. Copious dilution with water also occasions a deep brown precipi-

tate. Recently collected, its sp. grav. is 1.120 at 83° F., and 100 grains yielded 30 per cent. of solid matter, somewhat like burgundy pitch in odor. Deprived of one third of its weight by evaporation, it has the consistence of treacle, and when perfectly dried it has a resinous fracture, and is perfectly solid. It is, however, hygrometric, and in the damp season becomes soft like cobler's wax. Pussewah, as might be supposed contains some of the most valuable constituents of opium; its principal components being meconic acid, resin, morphia and narcotina.. From 500 grains of pussewah, containing 88.9 grains of residue, I extracted 12 grs. of pure narcotina, with but a trace of morphia. In a second specimen, affording 85.5 grs., on evaporation I found 10.6 grs. morphia, and 16.9 grains narcotina. The production of pussewah compared with that of opium in the Benares agency, is as 1 to 182—and it is all used in making the lewah or paste for the shells.

Among the thousands of individuals, cultivators and employés, with whom the factory is filled during the opium season, no complaints are ever heard of injurious effects resulting from the influence of the drug. Casual visitors sometimes are affected with headache, but the European officers who pass the greater part of the day with the mercury at 95° to 105° F. among tons of the drug, never experience any bad effects from it. The native purkhea sits nine hours daily, with his hand and arm immersed nearly the whole time in the drug, which he is constantly smelling, and yet feels no inconvenience. He has informed me that at the commencement of the season he usually experiences a sensation of numbness in the fingers, most probably attributed to the local fatigue, rather than to the drug. The men who wade knee-deep through the opium in the caking vats for several hours, and afterwards stand in it during the rest of the day, serving it out by *armsful*, complain of drowsiness toward evening, and are overpowered by sleep early in the evening, but not of any unpleasant or injurious effects.

From these and other examples, it is apparent that the health of the workmen is not injured by the business, and that, in the case of *vat-treaders*, the effects are more through the lungs than by the skin.

[Dr. Eatwell concludes his paper with an apology for the opium trade to China, and endeavors to show that its effects are not so pernicious as has

been asserted, and are less debasing than the European practice of excess in alcohol, and its moderate use not more injurious than is the moderate use of alcoholic liquors. But as this subject is more interesting to those who assume the terrible responsibility of administering, wholesale, to the depraved appetite of a nation, despite the opposition of its rulers, we will not occupy space with the arguments, however plausible. The reader is referred to a paper on the subject of India opium, by Prof. Carson, vol. xxi page 195, of this Journal, in which he gives a description and some chemical results, with several specimens of India opium, brought from China by Dr. Ruschenberger, U. S. N.—Ed. Am. Jour. Pharmacy.]

THE PHARMACEUTICAL CONVENTION OF 1852.

By Edward Parrish.

Having some months since proposed, in the Philadelphia College of Pharmacy, bringing together for mutual advantage and encouragement, the scattered elements of what may be called the *nascent* profession of pharmacy, I read with interest the proceedings of the recent convention of Pharmaceutists in New York, calling a National Convention in this city next fall. These proceedings, published in the last number of this Journal, and so forcibly urged upon the attention of its readers under the editorial head, are worthy to be kept before the pharmaceutical public until the time of the proposed convention; and as the purpose of the present article is to notice some of their details, and to offer some suggestions in relation to them, the Resolutions adopted in New York are here inserted.

"*Whereas*, The advancement of the true interests of the great body of pharmaceutical practitioners in all sections of our country is a subject worthy of earnest consideration; and *whereas*, pharmaceutists, in their intercourse among themselves, with physicians and the public, should be governed by a code of ethics calculated to elevate the standard and improve the practice of their art; and *whereas*, the means of a regular pharmaceutical education should be offered to the rising pharmaceutists by the establishment of Schools of Pharmacy in suitable locations; and *whereas*, it is greatly to be desired that the united action of the profession should be directed to the accomplishment of these objects; therefore,

"*Resolved*, That in the opinion of this convention much good will result from a more extended intercourse between the pharmaceutists of the several

sections of the Union, by which their customs and practice may be assimilated; that pharmaceutists would promote their individual interests, and advance their professional standing, by forming associations for mutual protection, and the education of their assistants when such association have become sufficiently matured; and that, in view of these important ends, it is further

"*Resolved*, That a Convention be called, consisting of three delegates each, from incorporated and unincorporated pharmaceutical societies, to meet at Philadelphia on the first Wednesday in October, 1852, when all the important questions bearing on the profession may be considered, and measures adopted for the organization of a National Association, to meet every year."

The plan of organization here proposed is perhaps the best that could have been adopted, under all the circumstances, and yet I confess to some regrets that no way opened by which all pharmaceutists who feel interested in the elevation of their profession, and the promotion of pharmaceutical reform, could partake in the deliberations of the Convention. If it were designed to legislate for a profession of pharmacy fully organized throughout the country, I could more willingly acquiesce in the policy of requiring of every member a certificate of his appointment as the representative of some local organization. But the actual condition of the drug trade, and the so called profession of pharmacy, is widely different. It is only in the large cities that they are organized at all.

As far as educated apothecaries have penetrated in the great west, and in the more Southern states they are isolated, scattered here and there, with very little concert of action, and no definite organization; they are, for the most part, surrounded by ignorance, overrun with quackery, and scattered singly among the legion of empyrics, they have scarcely strength to stem the current which sets so fatally downwards. Now for the encouragement and strengthening of such, the proposed Convention is eminently calculated, and by associating them in Convention with the apothecaries of New York, Philadelphia, Baltimore, Boston, Cincinnati and other cities, in which the benefits of association are already more or less fully attained, the strong tie of professional and fraternal interest already measurably created by a common object and kindred pursuits, may be widened and strengthened, a renewed interest created in our art, and a higher appreciation of its dignity and importance as a branch of medical science.

So strongly have I been impressed with the importance of an active sympathy with and for this class, that I believe much of the usefulness of the proposed Convention depends upon their being represented; and as a Philadelphia apothecary, speaking to a certain extent, at least, for the profession in this city, I would invite all who feel an interest in the objects of the Convention, to visit our city at the time, whether armed with credentials or coming in the simple character of pharmaceutists, desirous of elevating the standard of their profession.

Though not included in the invitation of the Convention held in New York, they will find a hearty welcome to the Quaker city; and there can be little doubt that besides being entitled to attend the sittings of the Convention, opportunity will be offered to communicate, officially or otherwise, their views and feelings to it. These remarks are made with no design to cavil at the action of the Convention in New York, which, by the delegate system, has wisely provided against any undue influence on the action of the Convention, arising from local causes. The sole object I have in view, is to encourage some to attend who might impart and derive advantage from the meeting, but who, because they must needs be pioneers in their several localities, and as yet lack the ability to draw together suitable organizations, cannot come as delegates.

I repeat, let all come—there is not so much material in the pharmaceutical ranks, that the Convention can afford to lose the counsels of any who have the cause at heart, and have the ability to promote it.

Besides the isolated class to which I have referred, there are in most of the larger towns throughout the country small numbers of Pharmaceutists, some of whom are more or less interested in the progress of their profession, who it is designed by the Convention in New York to organize into unincorporated Societies, to be represented in the National Convention. Upon the carrying out of this plan, depends, to a great extent, the national character of the Convention, and to a certain extent its usefulness, and yet it would be a cause of regret if, by precipitous or unadvised action, any of these associations should be so organized as to be incapable of subserving any permanently useful purpose.

It will be obvious at once that much of their future success and influence will depend upon the course taken at the very outset.

Grave and difficult questions which experience has proved are of the highest importance, must be met perhaps at their very first meeting. What shall be the qualifications for membership? Shall the number of members, necessarily small, be diminished by exclusive regulations, or, on the other hand, shall the enlightened and conscientious apothecary join hands with the ignorant empyric? Shall ill-gotten wealth and undeserved influence in the community weigh against the true qualifications of an educated, honorable and high-minded apothecary?

These and numerous other questions of equal import, especially pertaining to a society which is designed to form an integral part of a national organization to "be governed by a code of ethics calculated to elevate the standard and improve the practice" of Pharmacy, must be met and settled a priori.

Then will come the jealousies that are almost inseparable from trade, and which it is one of the chief objects of the proposed organization to break up. At the very commencement of any pharmaceutical association, some ground of intercourse must be agreed upon among the members, which, while it shall allow free scope to an honorable and manly competition, shall destroy every germ of this pestiferous plant.

Under such circumstances, will it not occur to every Pharmaceutist that great caution should be observed in the preliminary steps, looking to permanent local organizations, and that they should not be consummated till after the proposed Convention.

The delegates to such Convention will probably return home with a knowledge of the mode in which the oldest and most successful existing organizations are founded—with a just appreciation of the ethical relations which the members bear to each other, and to the medical profession—of the received opinions in regard to quackery, open and disguised—of the duties and responsibilities of druggists and apothecaries in regard to the education of candidates for the profession placed under their care—of the difficulties in the way of giving them such an education, and the best means of overcoming them, and with such enlightened views of the duty and destiny of the profession at large as would enable them to organize, on a sure foundation, auxiliary associations which would be permanently useful in promoting the great objects of Pharmaceutical reform.

OBSERVATIONS ON CHLORIDE OF IRON AND SODIUM, AND OTHER DOUBLE SALTS OF IRON.

By Frederic A. Cochran, of Baltimore, Maryland.

Some time during February 1851, while preparing chloride of iron and ammonia, it appeared to me that chloride of iron and sodium might be a valuable salt of iron; and not being aware that such a combination had been formed, I consulted the various works on Materia Medica and Pharmacy, but was unable to find any account of it. Therefore, I prepared about half a pound by dissolving the common carbonate of iron (peroxide) in hydrochloric acid, and adding to it a cold solution of crystallized carbonate of soda, so long as the peroxide of iron which it precipitated was readily re-dissolved. By this means I formed a very dark red nearly neutral solution of chloride of iron and sodium, almost tasteless, and only slightly astringent. This solution in a porcelain dish was placed on a boiling water bath to evaporate, and about the time for a pellicle to form, believing that the salt was amorphous, I was somewhat surprised to see all the solution converted into a magma possessing the common characteristics of hydrated peroxide of iron. It seemed to be decomposed, but as it was readily and entirely soluble in cold water, the evaporation was continued while its strong affinity for water caused it to dry slowly and in masses, which, however, when dry, were easily reduced to powder, and not sensibly deliquescent in the air. This powder very nearly resembled peroxide of iron in appearance, was slightly saline and styptic to the taste, and in small quantity was entirely soluble in cold water, forming a solution of a clear claret color. About an ounce of this powder was loosely wrapped in a single piece of thin porous paper, and kept exposed in the air during "all the seasons and their change," and the paper is now only slightly stained yellow, and the powder, as if having absorbed a little moisture, is in dry pulverulent lumps. This powder is not quite so soluble as it was a year ago when it was made, and its solution does not now indicate the presence of iron with a solution of ferrocyanuret of potassium as it did slightly at that time.

Reflection and experiment have induced me to believe that it

may be stated as a general truth, to which there may not be an exception, that there cannot be formed a neutral, simple and soluble salt of the sesquioxide of iron. The perchloride of iron, the nitrate and sulphate of the peroxide, are soluble, and acid and the vegetable acids form similar salts with the sesquioxide of iron. Therefore the excess of acid of any of these soluble salts may be neutralized with any of the alkalies, potassa, soda or ammonia, and form double salts. But in the preparation of these double salts, it is very important first to form the salt of iron by saturating the acid with sesquioxide of iron, and neutralizing the excess of acid with an alkali, because almost all the acids have a less affinity for the metals than for the alkalies, and if the affinity be satisfied by the union of the acid and alkali, and the alkali have an affinity for only one equivalent of the acid, as is the case in chloride of sodium and chloride of ammonium, it is impossible to form double salts by adding any oxide of iron or solution of iron in the same acid to either of these salts. But if the alkali have a strong affinity for more than one equivalent of the acid, then the excess of the acid combined with the alkali may be neutralized, as in the preparations of tartrate of potassa and iron, tartrate of potassa and antimony, and tartrate of potassa and soda.

Thus tracing the analogy which seems to be almost parallel in these preparations, I have chemically combined chloride of iron with potassium and ammonium separately, and found two distinct double salts. But of these double salts, chloride of iron and sodium seems to be the most important. I have repeatedly tried in a variety of ways to form this double salt, by mixing and evaporating at different temperatures solutions separately formed of perchloride of iron and chloride of sodium, but the result has been uniformly crystallized chloride of sodium in a solution of perchloride of iron. I have separated the former from the latter almost pure, by simply washing it with water. These experiments carefully performed, convinced me that I could only prepare the double chloride of iron and sodium by one process, viz: preparing the perchloride of iron and neutralizing the excess of acid with caustic or carbonated soda. I prefer the following formula:

Take of	Commercial Carbonate of Iron,	8 ounces troy.
"	Hydrochloric Acid, pure, sp. gr. 1.18,	24 fluid ounces.
"	Bicarbonate of Soda, - - -	18 ounces troy.
"	Boiling water, - -	72 fluid ounces.

Dissolve the sesquioxide of iron in the hydrochloric acid in a porcelain dish without heat, and the bicarbonate of soda separately in the boiling water, and when the solution shall have cooled, add it gradually to the solution of iron, stirring after each addition, until the peroxide of iron which it precipitates shall cease to be readily re-dissolved. As this solution filters very slowly, it may be decanted after standing an hour. It should then be evaporated at a temperature not exceeding 150° F., and the residue reduced to powder and kept in glass stoppered bottles. If the bicarbonate of soda contain 40 per cent. of soda the quantity is only enough.

Prepared in this manner ten grains of the dry powder dissolved entirely in an ounce of pure water, and formed a permanent pale red solution nearly tasteless, from which the salt was obtained unchanged by evaporation. But if twenty grains or a larger quantity be added to an ounce of water it forms a semi-solution, in which after a day or two, peroxide of iron sinks, leaving a clear nearly colorless supernatant solution of chloride of sodium. Boiling water produces the same change in a very short time. It is insoluble in alcohol and ether, and incompatible with the astringent vegetable tinctures, infusions and extracts, and the caustic alkalies. Considered anhydrous it consists of one equivalent of chloride of iron 63.42, and one equivalent of chloride of sodium 58.72. Its equivalent is therefore 122.14. It contains 33 per cent. of peroxide of iron.*

*Gmelin's Handbook, (Vol. V, page 268,) under the head, "Carbonate of Ferric Oxide and Potash," says, "when a ferric salt is supersaturated with strong carbonate of potash, the precipitated ferric hydrate is redissolved and forms a blood red solution. This solution is decomposed with precipitation of ferric hydrate, both by heat and by dilution with water or solution of caustic potash. Freshly precipitated ferric hydrate is not soluble in strong carbonate of potash, so that the presence of the potash salt formed at the same time [chloride of poatssium] appears to be necessary to the solution." A corresponding soda salt is noticed at page 272, carbonate of soda being used in lieu of the potash carbonate.

In bringing forward these quotations, it is with a view of throwing some light on the composition of Mr. Cochran's salt of chlorine, sodium and iron, as he does not appear to have made an analysis, but assumes it to be an anhydrous chloride of iron and sodium from the ingredients employed to form it. The numbers used by Mr. Cochran as the equivalents for chloride of iron, indicate the proto-chloride, whilst he considers that the

I have recently prepared syrup of chloride of iron and sodium. It is a permanent and very pleasant preparation, almost without any chalybeate taste; and it has been used and approved by many of the most experienced and eminent physicians of this city. The formula is as follows:

Take of Commercial Carb. Iron,	- -	one ounce troy.
" Hydrochloric Acid, pure,	sp. gr. 1.18	3 fluid ounces.
" Bicarbonate of Soda, -	- -	18 drachms.
" Boiling water, -	- -	9 fluid ounces.
" Fine powdered Sugar,	- -	24 ounces troy.

Prepare the solution of chloride of iron and soda as directed

perchloride exists in the compound. Assuming this to be an error of the pen, and that he intended to express half an equivalent of sesqui-chloride, ($FeCl_{1\frac{1}{2}}$) united to one eq. of chloride of sodium, the proportion of the elements should be 90 of chlorine, 23.3 sodium and 28 iron, whereas the actual relation and amounts of these elements in the materials used in the formula, (admitting the subcarbonate of iron to be hydrated sesqui-oxide, the bicarbonate of soda to contain its full proportion of carbonic acid, and the muriatic acid (sp. gr. 1.18) to contain 35 per cent. of chlorine) are 4363 grs. of chlorine, 2380 grs. of sodium, and 2194 grs. of iron. Now 2194 grs. of iron require 4231 grs. of chlorine to convert it into sesqui-chloride, which is the first step in the process, leaving but 132 grs. of chlorine to combine with the sodium which actually requires 3680 grs. to convert it into chloride of sodium. It must be apparent, if these numbers are nearly correct, that the conditions are present for the production of a compound analogous to that described above by Gmelin. As there is no carbonate of soda present in the solution, the soda must have combined with a full equivalent of chlorine, displacing a large portion of the iron from combination, which by uniting with the oxygen of the soda becomes sesqui-oxide, and which, in its nascent state, is redissolved by the sesqui-chloride of iron in the presence of the chloride of sodium. It is, therefore, quite probable that Mr. Cochran's preparation consists of sesqui-chloride of iron and sesqui-oxide of iron, united as oxychloride, combined with chloride of sodium; a supposition rendered extremely probable by the effect of heat. These remarks will apply to the other two compounds made in the same way, with potassa and ammonia. We have prepared the solution by the directions of Mr. C., and find that it is coagulated by heat and by caustic potassa. These suggestions are made entirely in reference to the chemical relations of the salt. As a new pharmaceutical preparation, it promises to be a valuable addition to the therapeutic agents of this class, and, as the author says, presents some points peculiarly desirable in a ferruginous tonic.—Ed. Am. Jour. Pharm.

above. Mix it with the sugar in a bottle, and form syrup without heat by shaking it at intervals. This syrup ought to measure twenty seven ounces, and yield seventeen grains of peroxide of iron to the ounce. One ounce of this syrup evaporated yielded a black residue, deliquescent in the air, from the solution of which, sesquioxide of iron was not thrown down by the caustic alkalies; but the solution was changed to its original new color.

Considering the great astringency of the perchloride, and the exceedingly unpleasant taste of almost all the soluble salts of iron, it may be fairly inferred that the double chloride of iron and sodium, possesses properties at least in point of taste, that may prove to be of some practical importance alike to the profession and to the people. The fact that iron is a powerful tonic, presupposes general debility to be the condition of the patient indicating its use, and in these cases the enfeebled condition of the stomach seems to require the mildest and least astringent chalybeate, that it may be absorbed and produce its constitutional invigorative effect.

Professor Wood (U. S. D. 9th edit. p. 999,) states that perchloride of iron "is one of the most active and certain preparations of iron, usually acceptable to the stomach, and much employed for all the purposes to which the chalybeates are generally applied;" and as perchloride of iron is so very styptic, it would seem to be almost impossible for it to be absorbed, and as chloride of sodium is daily taken into the stomach in the food, it may be possible that a chemico-vital action forms chloride of iron and sodium when perchloride of iron is given.

Chloride of Iron and Ammonium.

It is very well known that this compound is only a mixture as prepared according to the Pharmacopœias. Prof. Pereira (Elements of Materia Medica, &c., ed. 1852, p. 740) states, "by evaporating the solution (of perchloride of iron) with a solution of hydrochlorate of ammonia, we obtain a mixture of these bodies. There is no reason to believe that any chemical combination takes place." Also at p. 440, are these words: "Yellow or brownish streaks or bands are frequently absorbed in the cakes of sal-ammoniac. These are ascribed by the manufacturers to the neglect

of the workmen, who, falling asleep during the night, allow the fire to go down considerably, and then suddenly raise the heat, by which chloride of iron is sublimed in combination with sal-ammoniac. For several years I have been accustomed to show in the lecture room, that a solution of these yellow bands in water gives no traces of iron on the addition of ferrocyanide of potassium, until a few drops of nitric acid be added, when a copious blue precipitate is formed; and I therefore inferred that this yellow matter was a double chloride of iron and ammonium. My opinion has been fully confirmed by the experiments of Dr. G. H. Jackson." I have formed a double salt by the following formula:

Take of	Peroxide of Iron, - - -	1 ounce troy.
"	Hydrochloric Acid, pure, sp. gr. 1.18,	3 fluid ounces.
"	Carbonate of Ammonia, - -	1½ ounces troy.
"	Water, - - - - -	6 fluid ounces.

Prepare the perchloride of iron as directed for chloride of iron and sodium, and dissolve the carbonate of ammonia in the water; then neutralize the excess of acid of the perchloride with the solution of carbonate of ammonia, and evaporate at a temperature of 150° F., and the residue will be a powder resembling the double chloride of iron and sodium. It is not more soluble, but forms a darker solution, and if exposed to the air till the slight excess of acid evaporates, it is not precipitated or changed by ferrocyanide of potassium.

ON NICOTINE.

[*Extracted from a paper read before the National Academy of Medicine.*]

By M. Orfila.

Pure Nicotine may be characterized as easily as a Poison derived from the Mineral Kingdom.—Nicotine, discovered in 1809 by the illustrious Vauquelin, was studied in 1828 by Messrs. Posselt and Reimann, who found it in different species of nicotiana, as macrophylla, rustica, and glutinosa. Messrs. Boutron Charlard and Henry described some of its properties in 1836. Havana

tobacco contains two per cent., that of Maryland 2.3, that of Virginia 6.9, that of Alsace 3.2, that of Pas-de-Calais 4.9, that of the Nord 6.6, and that of the Lot 8. It is classed among the *natural volatile* vegetable alkalis, which are only three in number, namely, *conicine*, *theobromine*, and *nicotine*. This last is entirely composed of hydrogen, carbon, and nitrogen. It may be represented as a compound of one equivalent of ammonia (NH_3) and of one of a hydro-carbon containing four equivalents of hydrogen and ten of carbon (H_4C_{10}). It is now obtained by a much more simple process than was formerly adopted, which consists in passing the vapor of tobacco into water acidulated with sulphuric acid. Sulphate of nicotine is thus speedily produced, and this has to be decomposed by a strong alkali. It is then only necessary to apply sufficient heat to volatilize the nicotine. This mode of preparation indicates that smokers in respiring the smoke of tobacco introduce into their bodies a certain quantity of the vapor of nicotine.

Characters of pure Nicotine.—It is in the form of an oleaginous, transparent, colorless, tolerably fluid, anhydrous liquid, of the density of 1.048, becoming slightly yellow with keeping, and tending to become brown and thick from contact with the air from which it absorbs oxygen; its acrid odor resembles but slightly that of tobacco; its taste is very burning. It volatilizes at 77° F., and leaves a carbonaceous residue. The vapor which rises presents such a powerful smell of tobacco, and is so irritating, that it is difficult to breathe in a room in which one drop of it has been spilt. If this vapor be approached with a lighted taper, it burns with a white smoky flame, and leaves a carbonaceous residue as an essential oil would do. It *strongly blues* reddened litmus paper. *It is very soluble in water*, in alcohol, and in fat oils, as also in *ether*, which easily separates it from an aqueous solution. The great solubility of nicotine in both water and ether forms an important fact in its chemical history, as the greater number of vegetable alkalis, not to say all, if they dissolve easily in one of these liquids, are not readily soluble in the other.

Nicotine combines directly with acids, disengaging heat. Concentrated pure sulphuric acid, without heat, produces with it a wine-red color; on the application of heat to this it becomes thick, and acquires the color of the dregs of wine; if it be boiled it

blackens and disengages sulphurous acid. With cold hydrochloric acid it disengages white vapors as ammonia does; if the mixture be heated it acquires a violet-color, the intensity of which increases with prolonged ebullition. Nitric acid, aided with a little heat, imparts to it an orange-yellow color, and white vapors of nitric acid are first given off, then red vapors of hyponitrous acid. If it be further heated the liquor becomes yellow, and by ebullition it acquires a red color resembling that of chloride of platinum. Prolonged ebullition gives a black mass. Heated with stearic acid it dissolves and forms a soap, which congeals on cooling, and is slightly soluble in water, and very soluble in heated ether. The simple salts of nicotine are deliquescent, and difficultly crystallizable. The double salts which it yields with the different metallic oxides crystallize better.

The aqueous solution of nicotine is colorless, transparent, and strongly alkaline. It acts like ammonia on several reagents; thus, it gives a white precipitate with bichloride of mercury, acetate of lead, protochloride and bichloride of tin; a canary yellow precipitate with chloride of platinum, which precipitate is soluble in water; a white precipitate with salts of zinc, which is soluble in excess of nicotine; a blue precipitate with acetate of copper. This precipitate is gelatinous, and soluble in excess of nicotine, forming a blue double acetate, similar to that formed by ammonia with the same salt. It gives an ochre-yellow precipitate with salts of the sesquioxide of iron, insoluble in excess of nicotine. With sulphate of protoxide of maganese it gives a white precipitate of oxide, which speedily becomes brown by contact with the oxygen of the air. It separates the green sesquioxide from the salts of chromium. The red permanganate of potash is instantly decolorized by nicotine, as by ammonia, although this latter alkali acts more slowly and must be used in larger proportion.

The following reactions may serve to distinguish the aqueous solutions of nicotine from ammonia. Chloride of gold yields a reddish yellow precipitate, *very soluble in an excess of nicotine.* Chloride of cobalt yields a blue precipitate, which changes to green; the oxide thus formed does not readily dissolve in excess of nicotine, whilst ammonia dissolves the green precipitate and forms a red solution. Aqueous solution of iodine gives a yellow

precipitate with solution of nicotine, as chloride of platinum would do; with an excess of nicotine it acquires a straw color, and it is decolorized by the action of heat. Ammonia, on the contrary, immediately decolorizes the aqueous solution of iodine without rendering it turbid. Pure tannic acid gives with nicotine an abundant white precipitate. Ammonia gives no precipitate, but imparts a red color.

It is interesting to compare the physical and chemical properties of nicotine with those of conicine.

Conicine is yellow; *its smell resembles that of the urine of the mouse*, and differs entirely from that of nicotine; it strongly blues reddened litmus paper. Added to water and shaken with it, it floats on the surface and is not readily dissolved. Ether dissolves it easily. When heated in a capsule it forms white vapors, *having a strong smell of celery mixed with that of the urine of the mouse.* Weak tincture of iodine yields a white precipitate, which acquires an olive color with excess of the tincture. Pure and concentrated sulphuric acid *does not alter it*; when the mixture is heated it acquires a greenish brown color, and if the heat be continued it becomes blood-red and afterwards black. Nitric acid imparts to it a *topaz color*, which is not changed by the action of heat. Hydrochloric acid yields white vapors as ammonia does, and renders it violet, especially when heated. Tannic acid gives a white precipitate, and chloride of platinum a yellow precipitate. The red permanganate of potash is immediately decolorized. Corrosive sublimate yields a white precipitate. Acetate of copper gives a gelatinous blue precipitate, less soluble in an excess of conicine than is that formed with nicotine. Chloride of cobalt behaves with it as it does with nicotine. Chloride of gold gives a light yellow precipitate. *Neutral acetate of lead does not give any precipitate;* neither does the subacetate. Chloride of zinc gives a white gelatinous precipitate soluble in excess of the conicine. Sulphate of sesquioxide of iron gives a yellow precipitate. The words in italics indicate the means of distinguishing conicine from nicotine.—*London Pharm. Journ.*

NOTICE OF A MICROSCOPIC VEGETATION WHICH ATTACKS CRYSTALLIZED SUGAR.

By M. Payen.

During the summer of 1843, M. Payen investigated the cause of a remarkable alteration that took place in crystallized sugar at several of the refineries of Paris, which was manifested by a reddish coloration, and by small cavities disseminated over the surface of the sugar, changing its appearance and rendering it unsaleable, and found it to be due to a minute cryptogamic vegetation, which grew at the expense of the sugar. This year an analogous change, without the reddish coloration, was observed by M. Bayvet in his refinery, which M. Payen has determined to be due to a similar cause.

With the assistance of his friend Dr. Montague this cryptogam is considered new, and the name *Glycyphila* has been given to the genus, the plant of 1843 being Glycyphila erythrospora, and that of the present year (1851) Glycyphila elœspora.

The small plant which constitutes this parasite, like many insects, and even certain cryptogams, lichens, or algæ, hollows a species of cave or pit, at the bottom of which it is visible by means of a magnifier on account of its olive-grey color, which the whiteness of the sugar makes more apparent. When taken from its place of deposit and examined in water with a microscope magnifying 800 diameters, it is seen to be composed of ramose, articulated, hyaline filiments, and of colored sporules.

Those who wish to acquaint themselves with the minutiæ of these microscopic plants, are referred to the full account in the Pharmaceutical Journal, vol. xi. p. 311; whilst the leadingresults of MM. Payen and Montague are thus summed up in their communication to the Academy at Paris.

"1. A cryptogamic vegetation, propagated by its sporules, is transported in the air and unequally disseminated there.

2. These corpuscles fall in large quantities on the smooth, solid and crystallized surface of white sugar, which is soon affected, and converted in parts into water and carbonic acid.

3. The apparently spontaneous consumption of the sugar, nourishes an imperceptible vegetation, which, without doubt, also possesses itself of traces of nitrogenous substances in-

terposed between the crystals; substances which in all cases are indispensible to the developement of the plant."

We have here a fresh example of the immense power of distruction possessed by microscopic vegetation when multiplied to such an extent.

The action of these most insignificant beings, sometimes less easy of detection than in the present instance, might become, under some natural circumstance, a real misfortune to the cultivator.—*Comptes Rendus.*

ON CHLOROFORM AS A SOLVENT.

M. Lepage, of Gisors, France, in a paper published in the "*Journal de Chemie Medicále* for August, 1851, has studied the solvent powers of chloroform in relation to a variety of bodies.

1. *Resinous substances.* Mastic, colophony, elemi, tolu, and benzoin, are very soluble in chloroform in all proportions, forming solutions, some of which might prove useful as varnishes.

Copal and caoutchouc also dissolve, but more readily hot than cold. Amber, sanderac and shellac, are only partially dissolved, either with or without heat. Their constituent resins may be thus separated. Olibanum dissolves but slightly, hot or cold.

Guaiac and scammony resin dissolves readily, whilst jalap resin is insoluble; it merely softens and floats on the surface like pitch. Gamboge and dragon's blood yield some substance and their fine color to the solvent, and might be advantageously used as varnishes.

2. *Fixed oils and fats.* The oils of olives, poppy seed, almonds, castor beans, codlivers, rapeseed, neats foot, euphorbia lathyrus, croton tiglium, lard, tallow, palm nuts, cocoanuts, spermaceti, and probably all the fixed fats, dissolve readily, and in all proportions in chloroform. Wax, according to Vogel, yields 25 per cent. of soluble matter to this solvent, a statement corroborated by M. Lepage.

3. *Volatile oils.* These are all soluble in chloroform.

4. *Simple non metallic bodies.* Iodine, bromine, phosphorus, and sulphur are soluble, the two last only slightly.

5. *Neutral proximate principles.* Styracin, piperin, naththalin, cholesterin, [and we may add cantharidin—Ed.] are very soluble; picrotoxin, slightly so; paraffin only when hot, separating as the liquid cools; whilst amygdaline, phloridzin, salicin, digitalin, cynisin, urea, hematin, gluten, sugar, &c., are insoluble.

6. *Organic acids.* Benzoic and hippuric acids are very soluble, tannic but slightly, and tartaric, citric, oxalic, and gallic acids not at all.

7. *Organic alkalies.* Quinia, veratria, emetia, and narcotina, [to which we may add, from the observations of others, nicotina, conia, and atropia,*—Ed.] are easily soluble, strychnia with less readiness, and appears to undergo a change in its morphic condition; brucia is also moderately soluble, but morphia and cinchonia are insoluble in this menstruum.

8. *Salts of organic acids.* Tartar emetic, citrate and lactate of iron, the acetates of soda and potassa, the valerinate of zinc, and acetate of lead, are all insoluble.

9. *Salts of organic bases.* Sulphate and muriate of strychnia are soluble, whilst sulphate and muriate of morphia, and sulphate of quinia, are insoluble.

10. *Haloid salts.* The iodide, bromide, chloride and ferrocyanuret of potassium, the chloride of sodium, and muriate of ammonia, the iodides of mercury and potassium, are all insoluble in chloroform, whilst corrosive sublimate dissolves with great readiness.

11. *Oxysalts.* The iodates, chlorates, nitrates, phosphates, sulphates, chromates, borates, arseniates, and alkaline hyposulphates, are completely insoluble, as also are nitrate of silver, sulphate of copper, and probably all the metallic oxysalts.

* In a note to his paper, M. Lepage calls in question the statement of M. Rabourdin, (see vol. xxiii, page 139, Amer. Jour. Pharm.) that chloroform will dissolve atropia, and remove it from solutions. We have tried M. Rabourdin's process with conia, and find that it dissolves it readily. The editor of the N. Y. Journal of Pharmacy, suggests that chloroform will preserve anatomical and pathological specimens, without change of color or apparently of texture. This probably applies to the muscular and gelatinous tissues, but specimens embracing adipose structure, would probably be altered.—Ed. Amer. Jour. Pharm.

The wide range of solvent power which the above facts indicate, promises that chloroform will prove a most valuable auxiliary to the analytical chemist, and especially in proximate analysis. A valuable pharmaceutical application may be made in the means it affords of readily separating resin of guaiac, from jalap resin, cinchonia from quinia, and narcotine from morphia.

M. Augendre, of Constantinople, found that milk mixed with one per cent. of chloroform, was preserved for a month in a corked bottle, from 10th of April to 12th of May unchanged, and could be boiled without coagulating.

ON TWO VARIETIES OF FALSE JALAP.

By John H. Currie.

Two different roots have for some time back been brought to the New York market for the purpose of adulterating or counterfeiting the various preparations of Jalap. They differ materially from the Mechoacan and other varieties of false Jalap which formerly existed in our markets, as described by Wood and Bache in the United States Dispensatory, while some of the pieces bear no slight resemblance to the true root. The specimens I have been able to procure are so imperfect, and so altered by the process of drying, that the botanists I have consulted are unable to give any information even as to the order to which they belong. I have not been able either to trace their commercial history, nor do I know how, under the present able administration of the law for the inspection of drugs, they have obtained admission to our port. The article or articles, since there are at least two of them, come done up in bales like those of the true Jalap, and are probably brought from the same port, Vera Cruz.

No. 1 appears to be the rhizome or underground stem of an exogenuous perennial herb, throwing up at one end each year one or more shoots, which, after flowering, die down to the ground. It comes in pieces varying in length from two to five inches, and in thickness from the third of an inch to three inches. In some

of the pieces the root has apparently been split or cut lengthwise; in others, particularly in the large pieces, it has been sliced transversely like Colombo root. The pieces are somewhat twisted or contorted, corrugated longitudinally and externally, varying in color from a yellowish to a dark brown. The transverse sections appear as if the rhizome may have been broken in pieces at nodes from two to four inches distant from each other, and at which the stem was enlarged. Or the same appearance may have been caused by the rhizome having been cut into sections of various length; and the resinous juice exuding on the cut surfaces, has hindered them from contracting to the same extent as the intervening part of the root. On the cut or broken surfaces are seen concentric circles of woody fibres, the intervening parenchyma being contracted and depressed. The fresh broken surfaces of these pieces exhibit in a marked manner the concentric layers of woody fibres. The pieces that are cut longitudinally, on the other hand, are heavier than those just described, though their specific gravity is still not near so great as that of genuine Jalap. Their fracture is more uniform, of a greyish brown color, and highly resinous.

This variety of false Jalap, when exhausted with alcohol, the tincture thus obtained evaporated, and the residuum washed with water, yielded from 9½ to 15½ per cent. of resin, the average of ten experiments being 13 per cent. Its appearance was strikingly like that of Jalap resin. It had a slightly sweetish mucilaginous taste, leaving a little acridity, and the odor was faintly jalapine. It resembled Jalap resin in being slowly soluble in concentrated sulphuric acid, but unlike Jalap resin it was wholly soluble in ether. In a dose of ten grains it proved feebly purgative, causing only two or three moderate liquid stools. Its operation was unattended with griping or other unpleasant effect, except a slight feeling of nausea felt about half an hour after the extract had been swallowed, and continuing for some time.

This variety of false Jalap is probably used, when ground, for the purpose of mixing with and adulterating the powder of true Jalap, or is sold for it, or for the purpose of obtaining from it its resin or extract, which is sold as genuine resin or extract of Jalap. The powder strikingly resembles that of true Jalap, has

a faint odor of Jalap, but is destitute, to a great extent, of its flavor. The dust too, arising from it, is much less irritating to the air passages.

The second variety is a tuber possibly of an orchidate plant, a good deal resembling in shape, color and size, a butternut, (Juglans cinerea.) Externally it is black or nearly so, in some places shining as if varnished by some resinous exudation, but generally dull, marked by deep longitudinal cuts extending almost to the centre of the tubers; internally it is yellow or yellowish white, having a somewhat horny fracture, and marked in its transverse sections with dots, as if from sparse, delicate fibres. When first imported the root is comparatively soft, but becomes dry and brittle by keeping. Its odor resembles that of Jalap, and its taste is nauseous, sweetish, and mucilaginous.

This root contains no resin whatever. Treated with boiling water it yields a large amount (75 per cent.) of extract. This is soluble, to a great extent, likewise in alcohol. With iodine no blue color is produced.

The extract obtained from this drug appears, in ordinary doses, perfectly inert, five or ten grains producing, when swallowed, no effect whatever. Is this root employed for the purpose of obtaining its extract, and is this latter sold as genuine extract of Jalap?

Of the effect which frauds of this kind cannot fail to have on the practice of medicine it does not fall within my province to speak, but commercially its working is sufficiently obvious. One hundred pounds of Jalap at the market price, 60 cents per pound, will cost $60. In extracting this there will be about $5 worth of alcohol, making in all $65. There will be obtained forty pounds of extract, costing thus $1 62½ per pound.

One hundred pounds of false Jalap, No. 1, may be obtained for $20; admitting the alcohol to cost $5, it will make in all $25. This will produce thirty-six pounds of extract, costing rather less than 70 cents per pound.

One hundred pounds of variety No. 2 may be had for $20, and no alcohol is necessary in obtaining the extract. The yield being seventy-five pounds, the extract will cost rather less than twenty-seven cents per pound.—*N. Y. Journal of Pharmacy, Jan.* 1852.

COMPOUND FLUID EXTRACT OF SENNA AND DANDELION.

By Eugene Dupuy, Pharmaceutist, New York City.

Senna (officinal,)	two pounds.
Torrefied Dandelion Root, . . .	one pound.
Chamomile, ...	quarter of a pound.
Sugar, ...	twenty ounces.
Carbonate of Potash or Soda, . .	one ounce.
Oil of Gaultheria, ...	half a drachm.
Alcohol, ...	two ounces,
Water, ...	half a gallon.

Mix the dry plants, previously reduced to a coarse powder, with the water holding the alkaline carbonate in solution; let the mixture stand twelve hours; introduce it in a percolator, and gradually pour in water until a gallon of liquid shall have passed; evaporate it to twenty ounces by means of a water bath, then add the sugar, filter, and make the addition of the alcoholic solution of gaultheria when cold. By following this process, I believe that a kind of saponification takes place, which allows of the more ready solution of the active principle of the senna in the aqueous vehicle, probably because chlorophylle being united to a dried essential oil, participating in the properties of resins, is rendered soluble, and the extractive portion being denuded of its resinoid covering, is more readily extracted by the percolating liquid. I make use of a percolator possessed of a convenient hydraulic power; it has rendered readily, within thirty hours, a highly saturated liquid, containing in a gallon all the soluble principles of this extract. Ordinary percolators will answer also; but the ingredients needing to be more loosely packed, do not yield so fully or so readily. The addition of torrefied dandelion root is intended to give to this fluid extract some greater value on account of its peculiar action on the hepatic system. I employ in preference the German chamomile (Camomilla vulgaris,) because of its pleasant aroma and its carminative properties, joined to a bitter principle, which seems to increase the purgative effect of the senna.

This extract has become a favorite anti-bilious purgative with many of our practitioners, who, some of them at least, have used

it with success with children, who can take it readily, as well as for adults, where an anti-bilious purgative is desirable, seldom producing pain or nausea, and not liable to produce constipation.—*N. Y. Journal of Pharmacy, Jan.* 1852.

EXAMINATION OF THE SEEDS AND CAPSULES OF DIGITALIS PURPUREA.

By Dr. A. Buchner, Sen.

The author has examined the seed and capsules of *Digitalis purpurea.* The seed lost by drying at about 162° F., 9·26 per cent. of water. The capsules are very slightly hygroscopic, and lose scarcely 4 per cent. by drying. The author prepared extracts of the seed and of the capsules with ether and water, and examined them. The following are the results arrived at:

The seeds of *Digitalis purpurea* are preferable to the leaves, as they contain a larger amount of digitaline, together with a fat oil, are not so liable to be mistaken or collected at a wrong period, and are more easily dried and preserved without experiencing any alteration; in short, more dependence can be placed upon them.

The digitaline in the oily compound, which is easily prepared with ether from the seeds, merits every attention in a therapeutical respect, for the seed, or the oily digitaline compound from it, can be easily dispensed, and at a very moderate expense, in various forms, as emulsion, powder, pills, &c.

The seed-capsules and calyx of *Digitalis* likewise contains digitaline, but in proportionately far smaller quantity; so that the tannate of digitaline, which can be prepared from the aqueous extracts, is respectively as 3·00 and 0·33 per cent. of the weight of the seed and capsules.

This quantity, separated from the seed by exhaustion with boiling water, does not form the entire amount of digitaline; for, like resinous substances, it is not only soluble in alcohol, but also in oils, and it is partially combined with the fat oil of the seed.

The oil containing the digitaline, which can be extracted by ether, amounts to about 40 per cent. of the weight of the seed; it

belongs to the siccative oils. Ether extracts, besides the oil, another more resinous digitaline compound, which sinks in water, while the oil floats on the top. A portion of the digitaline compound can be removed from the oil by water.

The tannate of digitaline is soluble in hot water; on cooling, it again separates for the greater part.

Digitaline prevents the fermentation of an aqueous solution of sugar; it must therefore be considered as a poison to beer-yeast.—*Chem. Gaz. from* Buchner's *Repert.*

ON A NEW TEST FOR UREA.

By Professor Liebig.

When a solution of pure urea is rendered strongly alkaline with solution of caustic potash, a solution of corrosive sublimate added to it by degrees, a dazzling white precipitate—a combination of the peroxide of mercury with urea—is obtained.

As is well known, a dilute aqueous solution of corrosive sublimate may be mixed with an excess of a solution of bicarbonate of potash without the immediate production of a precipitate; if a solution of urea be added to this mixture, the above-mentioned white precipitate of urea and peroxide of mercury is immediately formed. This compound is so little soluble in water, that by this process 1-5000th urea can be detected with certainty in a liquid. The whole of the urea can be precipitated from urine by this means, and its application to the quantitative determination of urea in animal fluids is evident. I shall take an early opportunity of describing a suitable method for this purpose.

When oxide of silver (recently precipitated is best) is placed in an aqueous solution of urea, it is converted, in the course of a few hours, more quickly when gently heated, into a gray or yellowish-gray granular powder, which appears under the microscope to consist of transparent crystals. This compound when dry gives off ammonia when heated, leaving cyanate of silver, which burns at a higher temperature into sesquicyanide of silver, and finally into pure silver.—*Chem. Gaz. from Liebig's Annalen, Oct.*, 1851.

ON SOME COMBINATIONS OF THE ALKALOIDS WITH TARTARIC ACID.

By M. Arppe.

Tartrate of Morphine, $C^{35}\ H^{20}\ NO^6$, HO, $C^4\ H^2\ O^5$.—When morphine is added to a solution of bitartrate of potash until the solution is neutral, some bitartrate of potash first separates, and then tartrate of morphine, while neutral tartrate of potash remains in the solution. When morphine is digested with a solution of tartaric acid until the liquid has a neutral re-action, verrucoid groups of crystals, similar to the preceding, and consisting of concentrically-arranged groups of needles, separate on slow evaporation. They effloresce externally at about 68° F., but do not part with the entire amount of their water of crystallization below 266°.

The salt is readily soluble in water, and likewise in alcohol. Neither caustic nor carbonated alkalies cause a precipitate in the aqueous solution; and the same is the case with chloride of calcium, unless the solution is mixed with caustic potash; ammonia does not behave in this respect like potash. The most remarkable property of this salt is, that, on being heated to 266°–284°, it exhibits electrical polarity, which it retains for more than an hour after it has become perfectly cold. A small granule of the effloresced salt is gradually projected several inches. The same phænomenon is exhibited every time it is heated. The salt prepared with bitartrate of potash contained 6.824 per cent. of water, the other 6·496, 6.553, 6·41; the above formula requires 6·853 per cent. Laurents formula, $C^{34}\ H^{19}\ NO^6$, gives a much greater difference in the amount of water.

Bitartrate of Morphine, $C^5\ H^{20}\ NO^6$, HO + $2C^4\ H^2\ O^5$, HO (dried,) crystallizes readily from acid solutions, being far more soluble than the neutral salt. It is obtained by mixing the base and acid in equivalent proportions, &c. in smooth rectangular prisms. The salt loses 2 per cent. of water before it begins to be decomposed, which takes place below 284°. On cautiously applying heat, a small portion may be melted without decomposition. When dried in the air, the salt contains one more equivalent of water than is given in the above formula; it loses up to 212o, 1·99 per

cent.; from thence to 248°–284°, so much more that the entire loss amounts to 2·43 per cent.

Tartrate of Strychnine, $C^{44}\ H^{24}\ N^2\ O^4, HO, C^4\ H^2\ O^5 + 4HO$.—Strychnine behaves like quinine towards tartrate of potash; when the solution of the latter has been saturated with the alkaloid, shining needles more than an inch in length separate, which dissolve in water and in weak alcohol. The same salt is obtained from a neutral solution of strychnine in tartaric acid; it effloresces in the air without falling to a powder, becomes anhydrous at 266° and may be heated to 302° without further loss.

The salt prepared from bitartrate of potash gave in one experiment 7·76 per cent. of water, and left on ignition an exceedingly small residue of carbonate of potash. The strychnine is precipitated from a solution of the salt by potash and ammonia. Chloride of potassium gives no precipitate. The salt prepared with tartaric acid contains 7·588 per cent. of water of crystallization; the above formula requires 7·588.

Bitartrate of Strychnine, $C^{44}\ H^{24}\ N^2\ O^4, HO, C^4\ H^2\ O^5 + HO, C^4\ H^2\ O^5 + 6HO$, is the salt which separates when an excess of tartaric acid is employed. The slender acicular crystals, which have a strong lustre even when dry, do not effloresce in the air, and are not very soluble in water; potash produces no precipitate at first, but after a time causes a considerable opacity. A portion of the water of crystallization is expelled at 212°, but it does not part with the whole below 257°; it may then be heated without further loss to 302°. The air-dried salt gave at 257°, 284°, 302°, the same amount of water, viz. 10·11 per cent.

Tartrate of Quinine, $C^{20}\ H^{12}\ NO^2, HO, C\ H^2\ O^5$.—Quinine dissolves with difficulty in a solution of bitartrate of potash; on evaporating the solution, a mixture of bitartrate of potash and a crystalline salt of quinine separates. When an acid solution of quinine is neutralized with potash, slender acicular crystals of tartrate of quinine are obtained on evaporation, contaminated with the acid potash salt; the mother-liquor finally deposits neutral tartrate of potash. The salt, which quinine forms in preference with tartaric acid, is easily obtained by decomposing sulphate of quinine with neutral tartrate of potash, when a distinctly crystalline powder separates; this has a bitter taste, a neutral reaction, is sparingly soluble in water, and melts, when carefully heated,

without decomposition. At 266°–293°, it lost 1.5 per cent. of water, and did not effloresce. It appears to be anhydrous.

When tartaric acid is neutralized with quinine, only a gum-like mass is obtained on evaporation. If the acid is in excess, an acid salt crystallizes from the thick mother-liquor, which, owing to its ready solubility, could not be separated for closer examination. The solution has an acid and bitter taste, and exhibits a blue and red opalescence. When heated, the salt melts, turns yellow, and becomes resinous. The above formula requires 81.2 per cent. of quinine. Laurent's formula, $C^{38}\ H^{22}\ N^2\ O^4$, being admitted as correct, and the salt supposed to be neutral$=C^{38}\ H^{22}\ N^2\ O^4, HO, C^4\ H^2\ O^5$, requires 80·52 per cent. Potash separated from a solution of the salt 79 per cent of quinine; and as it was found that the potash dissolves some quinine, the author concludes that the first formula is most correct.

Tartrate of Cinchonine, $C^{20}\ H^{12}\ NO^2, HO, C^4\ H^2\ O^5+C^{20}\ H^{12}\ NO^2+2HO$.—Free tartaric acid behaves in the same manner to cinchonine as to quinine. On neutralizing bitartrate of potash with cinchonine, which dissolves readily and in abundance, there is formed, on cooling or evaporation, a considerable number of tolerably large acicular crystals, grouped in fascicles. They are very sparingly soluble in water, not altered in the air, and do not part with their water of crystallization below 212°–248°. In the anhydrous state, they exhibit electrical polarity, like the salt of morphine, only weaker. The whole of the cinchonine can be precipitated from its solution by potash. The air-dried salt lost up to 248°–257°, 4·69 and 4·62 per cent of water, and nothing more then up to 356°, at which temperature it begins to decompose. The above formula requires 4·49 per cent. of water. Laurent's formula, $C^{38}\ H^{22}\ N^2\ O^2$, requires 4·65, admitting the salt to be $C^{38}\ H^{22}\ N^2\ O^2, HO, C^4\ H^2\ O^5+2HO$.

Tartrate of potash forms no double salts with the alkaloids.—*Journ. für Prakt. Chem.*, li. p. 331.

ON THE DETECTION OF RESIN OF JALAP, RESIN OF GUAIACUM AND COLOPHONY, IN THE RESIN OF SCAMMONY.

By M. Thorel.

In expressing the opinion, some time ago, that the resin of scammony was the part of the drug that ought to be administered as a therapeutic agent, I conceived that this resin ought always to be prepared by the pharmaceutist himself.

Whenever the pharmaceutist, from any cause, is prevented from preparing it, and is obliged to purchase that which is met with in commerce, it is necessary that care should be taken to ascertain that it is pure.

Any adulteration would soon be discovered, unless the substance added was in small quantity or its action similar to that of the resin itself. Resin of jalap being of the latter class, and being at the same time cheaper than resin of scammony, has been used for adulterating it. The fraud is a very unjustifiable one, notwithstanding the fact that the substance used is somewhat similar in action, for no substitution of one agent for another should be tolerated in medicines.

I propose, for the detection of this fraud, a method which is founded on the perfect insolubility of resin of jalap in rectified ether, and the solubility in all proportions of the resin of scammony in this menstruum.

There are other substances, besides resin of jalap, which are used for adulterating resin of scammony, such as resin of guaiacum and colophony, and these are still more objectionable, as they are inert.

Resin of guaiacum may be easily detected by means of nitrous acid gas, or bichloride of mercury.

There are several reagents which may be used for detecting the presence of colophony in resin of scammony. Among them is oil of turpentine, which dissolves colophony at common temperature, and leaves resin of scammony almost wholly unacted upon.

But the best reagent for this purpose is sulphuric acid, which possesses the property of dissolving many resins, and of modifying,

more or less, their composition. If a little of this acid be poured over colophony, it immediately, and by simple contact, developes an intense red color. The same acid, when poured over pure resin of scammony, produces, on the contrary, no immediate change; it is only, after the lapse of some minutes, and with contact of the air, that it becomes colored, and then but slightly, the color being that of wine dregs.

By this means, the presence of one-twentieth part of colophony may be detected in resin of scammony. For this purpose, it is only necessary to put four or five grains of the resin into a glass or porcelain mortar, to add 60 or 80 grains of the oil of vitriol of commerce, and to rub it with the pestle. If the resin of scammony should contain colophony, the mixture will at once become red, but if on the contrary it is pure, it would only become colored after some time.—*London Pharm. Journ., from Repertoire de Pharmacie.*

REMARKS ON THE FLUID EXTRACT OF ERGOT.

By Joseph Laidley, Pharmaceutist, of Richmond, Virginia.

The preparations [of ergot] heretofore employed have been the (solid) extract, decoction, injection, tincture, syrup, compound powder, pill, wine and the oil. Pills and the extract are only suitable for administration in such cases as require the continued use of the medicine; being solid, they do not exert their influence speedily enough for cases of labor; besides, not one of the above preparations fully represents ergot. We are as yet unacquainted with the active principle of this medicine. It was supposed to be the oil; but this view has been shaken by the fact that the oil, when obtained by *simple expression*, is inert; but when procured by treating ergot in powder with ether, and allowing the latter to evaporate spontaneously, the resulting oil possesses in some degree at least the properties of ergot, shewing that the oil, when obtained by means of ether, probably contains *some* of the active principle dissolved in it, but is not itself that principle. Again, it was thought by others that in the extract (sometimes, but erroneously

termed ergotine) resided the active principle; but this view has given place to the belief that while it possesses some activity, yet it is not *the* active principle. While this subject is invested with so much doubt, there seems to be but one proper course to pursue in making a preparation of the drug—that is, to make a medicine that will exactly represent ergot in its natural form. This the author has done. He was desirous of offering to the obstetrical practitioner a medicine that will relieve the latter of the difficulty he has labored under when prescribing ergot, caused by the uncertainty of the drug itself, (owing to age or other cause,) or of weak preparations made from, probably, an equally uncertain article. In fulfilment of this desire the fluid extract is offered. It is prepared by treating fresh and good ergot in powder, first with ether, allowing the latter to *evaporate spontaneously*, thus securing all the oil; then with alcohol, and lastly with water; the last two liquids are evaporated below 212° until the fluid measures one-third as many fluid ounces as the ergot employed weighed in troy ounces; sufficient sugar is added to preserve it, and the oil is then thoroughly incorporated, and sufficient water added to render it of such strength that one fluid drachm (one teaspoonful) will represent 40 grains or about two doses of ergot.

Prepared as above, fluid extract of ergot is in the form of a concentrated syrup, possessing the advantages of being pleasant to take, of being always ready for use, thus avoiding the delay sometimes attendant upon administering a medicine where delay is so hazardous as in labor. The smallness of the dose is another recommendation in its favor. The writer believes that it will keep unchanged for a long time. Some in his possession, after having been kept for about two months in a moderately warm situation, is entirely unchanged. Some of this preparation was furnished to Dr. C. S. Mills of this city, who tested it in a case of labor about the middle of November. He informs the writer that it proved entire satisfactory; its action was almost immediate and produced no nausea.—*Stethoscope, Jan.* 1852.

LETTER ON OPIUM, SCAMMONY AND OIL OF ROSES.

The following letter, addressed to a Commercial House in this city, [New York] will be found to communicate some interesting information. We print it as it is written. Perhaps our readers may derive some information from the prices given; we can make nothing of them.

CONSTANTINOPLE, May 10, 1851.

To ——— TRIESTE,

We received your honored letter, dated Messina, with great pleasure, and hasten to give you the information you desire hoping and wishing that both an agreeable and useful connection may arise from it, for which purpose we shall not fail to give your House direct information, respecting the articles you mention. Opium is found here in different qualities, the goodness of which chiefly depends on the conscientiousness of those who prepare it. The best quality coming from some districts of Asia consists of the pure juice, which flows spontaneously from the incisions made in the poppy heads, is inspissated and formed into little balls. It has eminently all the qualities which are requisite in good opium, and contains from 8 to 10 per cent. and more, of morphia. This sort is the most in request among the druggists in Germany and France, to be sold by retail to the apothecaries, but scarcely forms the 8th or 10th part of all the Turkish opium which comes to the market. Next to this is the ordinary quality, coming from the other provinces of Asia Minor; where in preparing it, they are less cautious, partly pressing the poppy heads, in order to get as much juice as possible, partly scraping the juice that has oozed out too hard, by which certain mucilaginous parts of the plant, and shavings of the rind, get mixed up with it; in this way that kind of opium is produced, which is so often sold, and at Trieste bears the name of Tarense opium.

By this proceeding, of course, the morphia is lessened, and often in a great degree; but in the Chinese market, in proportion to which the consumption of the article in all other countries is scarcely to be reckoned, little or no regard is paid to this, which explains why the latter inferior article always brings nearly as high a price as the former pure quality. Besides these, several sorts of adulterated opium are sold, some of which are prepared, (principally for the North American market,) by mixing in the juice of the whole plant, or other substances. The

difference of the qualities would be best perceived by a collection of samples, which we should be glad to send you, if you would tell us where to direct them. The price of the aforementioned prime quality, which we call "Güeve," from the district which chiefly produces it is, now 10⅜c. for the English pound, free on board. The current second quality, 10⅛c. The price of the adulterated is much lower, in proportion to amount of the adulteration; which, however, in most cases, is not discernible by the exterior. The prices are, of course, principally regulated by the Chinese market; yet the more or less considerable crop produced is not without influence. So especially now, the growers show little inclination to sell, as the new plantations are endangered by a continual want of rain. Nevertheless, probably after two months, when the new crop begins to come to market, we may be able to buy cheaper than now, if the news from China should not cause the price to rise.

As regards scammony, almost everything that has been said respecting opium is literally applicable. The difference in quality depends upon the way of preparing it, while the plant from which it is taken is always the same. The best sort is the pure dried juice, which spontaneously flows from the incisions made in the root of the plant; the next quality is produced by a strong pressure of the root. These two qualities go in commerce by the name of the 1st and 2d scammony d'Aleppo, which name, however, is wrong, as Aleppo produces the 1st quality, but only in a very small quantity, whilst the greater part comes from several districts of Asia Minor. Then follows the so called quality of Skilip, a district that produces much, but where they have the bad habit of trying to gain in the weight, by adulterating the pure substance. The adulteration is made in several ways; the least injurious of which perhaps is, that they add (as in opium), the pressed or boiled out juice of the whole plant; the not inconsiderable quantities of this sort, which are yearly brought from the interior, find a good sale in Europe, which would hardly last, if a sufficient quantity of the before mentioned finer qualities were to be had. Besides these, a number of other sorts are sold in Europe, under the name Smyrna scammony, which consist of a hard and heavy mass, but contain only a very small part of the real scammony.

With this article it would also be necessary, as we said with

the opium, to explain our statement by sending you samples, which we will do if you desire it. The finest prime sort is seldom found, and is now entirely wanting. It would sell readily at the rate of 21½c. per pound, English. The good second quality brings according to the sort, from 18c. to 15¾c. a pound, free on board, but is also now very scarce, and will, in the course of two or three months, be more abundant in fresh quality. Of the Skilip sort, there are several quantities in the market, according to the quality, at the price of 13 to 10s. 10d. an English pound, free on board.

Of the oil of roses, there is, properly speaking, only one genuine quality, with only little difference in odor, but with remarkable variation in the facility with which it congeals, which property is almost generally considered an essential proof of its being genuine, but without reason; as we have ascertained by much experience, during a long sojourn in the country where it is produced. Several reasons may contribute to this difference of congealing, but the chief one may be considered the difference of soil, and method of preparation. We give our principal attention to the article, and have founded an establishment at Kissanlik, where it is chiefly produced, through which alone we make our purchases, and must do so, in order to have the attar genuine, as we have experienced, that all the essence without exception that is sold here, second hand, is far from pure.

The common method and the one now almost exclusively adopted of adulterating it, with geranium essence, may be known to you, and that it really is the most in use, you may conclude from the price of the genuine article having been for a long time much higher at the places of production, than the price of that which is sold as prime in Europe. This fact has only lately been noticed in Europe, therefore in the price current of Trieste, for instance, you will find the genuine article noted, besides the prime article, with a considerable difference of price. What at London is designated as prime quality, is only a mixture of 60 to 70 per cent. essence of rose, with 30 to 40 per cent. essence of geranium. Samples will also prove this to you more clearly. The price of the genuine attar is, to-day, 22¾c. for an ounce, at 10 drachms, according to which the English price current may be understood; in six or eight weeks after the preparation of the new crop, we hope to buy cheaper, but at what rate we cannot yet judge, as this

depends on the produce of the crop. There is some cheaper and adulterated, and which is only bought by ignorant persons. This oil comes by caravans from the interior of Asia, and in spite of all our inquiries, we could not succeed in getting any sure information about the plant which produces it, or the method of preparation.—*New York Journal of Pharmacy, Feb.* 1852.

ON THE PRODUCTION OF SALTPETRE AND SODA IN HUNGARY.

By Jos. Szabó of Pesth.

Professor Szabó describes the methods employed in Hungary to procure saltpetre, from which it receives the following technical names:—

Gay Saltpetre.—This is the kind obtained by washing the earth dug from the floors of the rooms occupied by the poorer classes, to whom boarded floors are unknown. The nitre-boilers prefer the gay earth to all other materials. Although it affords only a poor lye of 2°-3°, it yields a purer saltpetre, with no other impurity than chloride of sodium. Therefore even the government regulations against the manufacture of nitre from this source have met with no success.

Plantation Saltpetre is now obtained almost exclusively from those plantations belonging to Baron v. Vay, near Debreczin, established at the time of the war with France, and which are still regularly worked. They consist of nearly 1000 pyramids, 12 feet in length, 3–4 feet broad, and 6–8 feet high, composed of two-thirds of washed gay earth and one-third ashes. As they are entirely uncovered, they do not yield more than about 300 cwt. of saltpetre annually, while rather more than 50 gay-earth heaps at Bicske are said to yield more than 200 cwt. annually. These pyramids are scraped down three or four times a year, and the part removed washed with water to extract the salt.

Kehr Saltpetre is produced at the kehr places (*Salétromszérü*,) which occur most frequently near Debreczin, in the district between the Theiss and Marosch. There are also saltpetre kehr places at the military boundaries near Alibunár. The boiling-

house at Debreczin is said to have been established more than two hundred years. In Debreczin itself there is an artificial and not very productive kehr place near the boiling-house, as well as also a few plantations, and besides these the natural kehr places of twenty-four villages belong to the town. These far more productive natural kehr places are always situated in the immediate neighborhood of the villages; the most important are at Mike-Pércs, Paláyi, Vértes, Ascád, Sz. Mihály, Nánás, and Szoboszló. The workmen are all inhabitants of the villages, and carry on the manufacture of saltpetre in conjunction with agriculture. Szabó visited one of the principal kehr places, that at Mike-Pércs, during the most favorable season, and ascertained all the particulars connected with it, which he states to be essentially the same at all the others.

The kehr places at Mike-Pércs is situated upon a gently sloping ground between a village and a marsh, which is never quite dry. It does not, like the natural soda kehr places in Hungary, yield the salt directly; but it is necessary that the earth, consisting of loose black sand mixed with chalk and clay, which formerly was a part of the marsh, should be strewed from time to time with ashes, especially straw-ashes, in order to make the salt come out upon the surface. The constantly moist ground receives the organic matters, partly from the marsh and partly from the village, all the drainage from which flows to the marsh. As manure is not used there to put upon the land, but only for making banks round the fields, the saltpetre grounds receive a sufficient supply of appropriate material. Under these favorable circumstances, the saltpetre is formed, chiefly in May and June, even during twenty-four hours, in such quantity that it can be collected every evening. The uppermost surface of earth is scraped off by means of an iron, shaped like a knife, which is dragged by a horse, and the saline earth swept together and collected, while all the irregularities of the ground are again carefully levelled.

The establishment of a new kehr place is preceded by a formal examination, in which attention is paid to the occurrence of certain narcotic plants. Upon such ground as is suitable for kehr places, very good tobacco grows, which, however, is not used in consequence of its deflagrating in the pipe. All plants which assimilate saltpetre are carefully removed from the kehr places.

With regard to the geognostic relations of the kehr places, Szabó remarks that the efflorescent product of the kehr places contains not only potash saltpetre, but other salts as well, such as sulphate of magnesia, and especially carbonate of soda, sometimes in such quantity, that it is preferred to make use of the kehr saltpetre in the soap factory of Debreczin.

The formation of kehr saltpetre stands in evident connection with that of kehr soda. Besides the saltpetre and soda district of Debreczin, the soda region forms a broad band running through the centre of the great Hungarian plain, especially of the sandy ground in the Pesth and Bács districts. There are in this direction a great number of lakes and marshes, the waters of which are not in all cases saline. In the saline lakes, the greater part of the soda effloresces, not immediately at the water's edge, but upon that part of their banks which is left dry by the evaporation in warm weather. This spot becomes covered with an abundant coating of soda, which is collected by sweeping it together. However, soda kehr places sometimes occur in situations which are considerably more elevated than those lakes. Szabó refers the formation of soda to the action of carbonate of lime in solution upon silicates of soda. He is of opinion that carbonate of potash is formed in a similar manner, but that on account of its ready solubility it remains unobserved.

The detailed description of the processes of washing the kehr earth, and the refraction of the lye, that is the addition to it of an alkaline lye, the extraction of raw saltpetre by evaporation, and the refining of the saltpetre, which operations are for the most part carried on by the country people themselves, testifies to the already advanced state of the manufacture of saltpetre in Hungary, which it is probable however may still admit of considerable extension.—*Chem. Gaz., from Archiv der Pharm.*, vol. lxvi. pp. 311–316.

ON THE EXAMINATION OF SULPHATE OF QUINIA, WITH A VIEW TO THE PRESENCE OF THE SULPHATE OF CINCHONIA.

By M. Soubeiran.

M. Liebig has suggested the following method to separate cinchonia from quinia in the sulphate: Triturate 15 grains of the sulphate of quinia with two ounces of solution of ammonia, throw

the whole in a flask, add two ounces of ether, agitate many times and suffer it to rest. The quinia liberated by the ammonia is dissolved by the ether, whilst the cinchonia insoluble both in the ammoniacal liquid and the ether floats between the two liquids.

This process appears to be the simplest of all that have been proposed; but as M. Henry has shown (Jour. de Pharm., 1849,) that cinchonia is not entirely insoluble in ammonia, we prefer the following modification of M. Liebig's method:

38 grains of sulphate of quinia are taken from an ounce bottle of the salt, its contents having been well mixed, and introduced into a flask with half an ounce of solution of ammonia, agitate them well, and allow the mixture to repose 24 hours. It is then heated in a water bath until the excess of ammonia has been driven off almost completely, allow it to cool and add one ounce of pure ether. By agitation the quinine is dissolved quickly and completely, and by rest the contents of the flask consists of two transparent liquids, the lower containing sulphate of ammonia, the upper quinia dissolved in ether without any intermediate stratum of cinchonia, if the salt is pure.

To test the accuracy of the process, 30 grains of sulphate of quinia was mixed intimately with 1½ grains of sulphate of cinchonia and proceeded with as above. The ether dissolved the quinia readily as before, but the cinchonia remained as an insoluble layer, between, which was so voluminous that a fifth part of the quantity used might have been detected.—*Jour. de Pharm.* Jan. 1852.

[Note. This ready method of detecting cinchonia is of value, as it has, (we are informed) become quite usual with the manufacturers to crystallize all the sulphate of cinchonia they can with the quinine. Heretofore testimony has been unfavorable to the claims of cinchonia to much therapeutic value, and until it shall be otherwise determined cinchonia should be looked upon as an adulteration. We are informed that careful experiments are now in progress in this city at one of our public institutions, by a physician eminently qualified to conduct them, to determine the real merits of this alkaloid in a medical point of view.—Ed. Amer. Jour. Pharm.]

OBSERVATIONS ON THE PREPARATION OF PHOSPHORUS.

By M. Donovan.

The process ordinarily followed for the preparation of phosphorus comprehends various operations, which render the execution long and difficult. For instance, the calcination of the bone to destroy

its organic matter; the pulverization and sifting of it to facilitate the action of sulphuric acid upon it; the washing of the sulphate of lime to remove the acid phosphate which it retains obstinately; the evaporation of the washing waters to get the product dry to mix with the carbon for final distillation in an appropriate apparatus, are certainly long and tedious operations, the practical details of which are truly inconvenient.

The new process suggested by M. Donovan, singularly facilitates the preparation of phosphorus. It consists as follows:

Take beef or sheep bones as they are found in commerce, with their natural quantity of fatty matter and moisture. They are digested during four hours in a mixture of one part of nitric acid of commerce, and ten parts of water. The calcareous salts are removed and dissolved, whilst the soft flexible gelatinous tissues, retaining the form of the bones, remain. These can be washed and employed in the manufacture of glue.

The slightly acid liquid containing the phosphate and nitrate of lime, is then treated with an excess of neutral acetate of lead, and the precipitate of phosphate of lead washed and dried. It is then put in a covered crucible and heated to redness to condense its volume, but this operation requires care, else the phosphate will lose its pulverulent form and fuse, requiring a difficult pulverization.

The dense pulverulent phosphate is then intimately mixed with one sixth of its weight of charcoal, previously calcined, and afterwards distilled in the ordinary manner in large earthen retorts, properly heated.

If it is desired to prepare but a small quantity of phosphorus, it will be found more eligible to use harts-horn shavings, which, though costly, contain a large percentage of phosphate of lime. The process then becomes neat and elegant, its execution prompt and easy, and time, trouble and combustible matter are economised, besides much smaller vessels being required.

The following proportions of harts-horn shavings are requisite:

Harts-horn shavings, (not calcined)	500 parts.
Nitric acid of commerce,	530 "
Water,	5000 "
Neutral acetate of lead,	750 "

In addition to the advantages of employing harts-horn shavings mentioned, the gelatinous matter remaining is sufficiently pure for use in making jellies.—*Jour. de Pharmacie, Jan.*, 1852.

Varieties.

Disulphate of Quinia rendered soluble by Tartaric Acid.—M. Righini has proposed to substitute tartaric acid for sulphuric acid to render the commercial sulphate of quiniæ soluble in water when directed in solution by prescriptions, as being less austere and disagreeable to the taste. M. Casorati, of Turin, gives the following formula: Sulphate of Quinia, *six grains;* Tartaric Acid, *three grains*; Syrup of Oranges, *a fluid ounce. L'Abeille Médicale.*

Bark of the Musssenna Tree (of Abyssinia) a Remedy for Tape Worm.—By Dr. Prunerbey.—This bark, derived from a leguminous tree, is a popular remedy in Abyssinia for the tænia which is so common in that country, and for which the kousso is so celebrated. Dr. Prunerbey treated a patient with this bark with the following results. It was given by admixing about two ounces of the powdered bark with hashed meat slightly cooked. The patient eat nothing the evening preceding, nor on the day the medicine was administered until the evening, when he took a little rice. The next day the worm was passed with a soft stool, in many pieces, a little softened and decomposed. Since this case, the author used the remedy with complete success in nineteen cases. Its action differs from that of kousso by killing the parasite without causing diarrhœa.—*Jour. de Chimie Méd.*, Feb. 1852.

Purgative Syrup of Jalap. By M. Viel.—Take of powdered jalap, an ounce; alcohol, 3½ fluid ounces; water, 26½ fluid ounces; sugar, 30 ounces. Digest the jalap in the water and alcohol, previously mixed in a flask, during five or six hours, at the temperature of 90° to 100° F., filter, add the sugar and dissolve it, aromatise and preserve for use.

This syrup, which is an agreeable purge for young children, may be given in tea-spoonful doses.—*Ibid.*

Soluble Iodide of Starch. By M. Duboys, of Limoges.—Take of pulverized iodine one part, starch 9 parts. The starch is gradually added in small quantities to the iodine, with constant trituration. The mixture is then moistened with a little water introduced into a flask and heated, plunged up to its neck in a water bath. The flask is withdrawn and agitated from time to time and the iodide tested as to its solubility. The heating is continued during three hours to effect its complete and instantaneous solubility in water.

The iodide is found in the retort in the form of a thick, tenacious and elastic paste which is washed thoroughly on a filter with rectified alcohol, and then dried in a stove, or in free air.

The iodide, after desiccation, is black, brilliant, nearly inodorous, nearly

crystalline and friable; reduced to powder it preserves its brilliancy. This powder adheres to the fingers and colors them if moist. The solution in water has a Prussian blue color.—*Jour. de Chimie Méd.*, Dec. 1851.

Syrup of Iodide of Starch.—Put two drachms and a half of soluble iodide of starch in a pint flask, and pour on it four ounces and a half of boiling water and boil for two minutes, then add eight ounces of finely powdered sugar and dissolve. Thus prepared the syrup contains no globules when examined with a lens, is very limpid, and is exempt from the styptic taste of the ordinary preparations of iodine. This syrup should not be kept long, and should be preserved in well stopped bottles.—*Jour. de Chimie Méd.*, Feb. 1852.

Gentianin recommended as a substitute for Cinchona.—Dr. Kuchenmeister affirms that impure and uncrystallized gentianin can be substituted for sulphate of quinia, and he has noticed: 1st, that this substance acts on the spleen at least as efficaciously as sulphate of quinia. 2d. Its action is not less rapid. 3d. That it is sufficient to administer 15 to 30 grains twice a day; and 4th, that gentianin constitutes probably the most valuable substitute for Peruvian bark.—*Jour. Chimie Méd.* Dec. 1851.

Preparation of Dahlia or Georgina Paper.—Dahlia paper is prepared by bruising the petals of the red dahlia with a little water, expressing the juice and filtering. This is then applied to white filtering paper by means of a pencil brush. This paper, which may replace the litmus paper, is colored red by acids and green by alkalies. If the color of the juice is not sufficiently deep, it may be concentrated by evaporation, filtered, and then used.—*Ibid.*

Mannite in the Leaves of the Lilac. By M. Zachariah Roussin.—M. Roussin has obtained mannite from the leaves of the lilac (syringa vulgaris) in considerable quantity by precipitating a decoction with neutral acetate of lead, filtering, removing the excess of lead by hydrosulphuric acid, again filtering and evaporating to an extract. This extract treated with boiling alcohol of 60° and the solution filtered hot, deposits, on cooling, a voluminous crystallization of mannite.—*Ibid.*

On the Employment of Sulphate of Zinc for the Preservation of Animal Matter. By M. Falconet.—According to the author, the substances the most difficult to preserve, as the brain, the intestines, and other pathological preparations, may be most effectually preserved in a solution of the sulphate of zinc, retaining all their characters without the least alteration, and, what is very important, not experiencing the contraction observed when alcohol is used. The steel instruments employed for operating on

the substances which have been injected with the preserving liquid, are not injured even when immersed directly in the liquid, and left there for twenty-four hours.—*Comptes Rendus.*

Iodine rendered soluble by Syrup of Orange-peel and Tannin.—M. Debanque mentions, in the *Journal de Pharmacie* of Antwerp, that he has found means of keeping iodine in a state of solution, when added to mixtures in the form of tincture. The author uses for that purpose syrup of orange-peel, which answers the purpose perfectly. It was suspected that *tannin* was mainly instrumental in this result; and this was rendered evident by putting a few grains of tannin into a quantity of water to which tincture of iodine has been added, and in which the iodine had of course been precipitated. The addition of the tannin caused the iodine to be immediately re-dissolved. Thus will the syrup of orange-peel be advantageously added to mixtures containing tincture of iodine, and tannin to injections composed of water and the same tincture.—*Med. Exam. and Lancet.*

Cement for Mending China, &c.—Take of isinglass two drachms, sprinkle it with water and allow it to stand until softened, then add as much proof spirit as will rather more than cover it, and dissolve with a moderate heat. Take of gum mastic one drachm, dissolve it in two or three drachms of rectified spirit. Mix the two solutions, and stir in one drachm of gum ammoniacum, previously reduced to fine powder and rubbed down with a little water. Evaporate, if necessary, in a water-bath to a proper consistence. Keep the cement in a bottle. When required for use plunge the bottle in warm water, and apply the cement with a stick or a small hard brush to the china previously warmed. Compress the pieces firmly together until cold, taking care to make the contact perfect, and using a very thin layer of cement. When properly applied the cement is almost, if not quite, as strong as the china itself, unless exposed to the combined action of heat and moisture.

Another cement, useful for many purposes, may be made by dissolving isinglass in glacial acetic acid, and reducing it to the consistence of a thin jelly. It may be applied in the same manner as the above, but does not require to be warmed.—*Pharm. Journ.*

On the proportions of Iodine contained in Cod-Liver Oils. By MM. Chevallier and Gobley.—We have followed the process indicated by MM. Girardin and Preisser. It consists, as is known, in saponifying the oil by an excess of a solution of caustic soda, at 25 degrees, then heating it, without allowing it to boil, until a perfect combination takes place, and afterwards evaporating the whole to dryness. The soap obtained is to be carefully carbonized in a closed crucible; towards the end of the carbonization a sufficient quantity of carbonate of ammonia is to be added to con-

vert the excess of caustic of soda contained in the mixture into carbonate. The carbonaceous residue is then exhausted by boiling alcohol at 96.100, and the alcoholic liquors evaporated to dryness, leaving a slightly saline residue consisting of iodide of potassium.

As we wished to arrive at more certain results than MM. Girardin and Preisser, we estimated, by means of chloride of palladium, the quantity of iodine contained in the saline residues; and in this manner we have been able to determine the actual quantity of iodide of potassium contained in the cod-liver oils we wished to examine.

The following are the results we obtained:—

1 litre of cod-liver oil yielding	0.10	gramme	of iodide	of potassium.
2	0.08	"	"	"
3	0.04	"	"	"
4	0.03	"	"	"

—*Pharm. Journ., from Journal de Chimie Médicale.*

On Peach-Leaf Water. By Messrs. Fellenberg and König.—The authors distilled in 1847 and 1848, peach-leaves with water, and the difference in the proportions of prussic acid in these two sorts of water was very considerable. The leaves which yielded the smaller proportion of prussic acid, were those of the year 1848, when the tree had an abundance of fruit, whilst in the year 1847, it had only one fruit. Mr. König in Bern, found in 1000 parts of a peach-leaf water, prepared by himself, 1.407 of prussic acid. That prepared by Fellenberg in 1848, contained in 1000 parts, 0·437 parts.—*London Pharm. Journ., from Central Blatt.*

[These facts are interesting in connection with the observations of Mr. Perot, at page 109.—*Ed. Am. Jour. Ph.*]

On some new Constituents in the Ergot of Rye. By Dr. F. L. Winckler.—In the analysis of ergotine, prepared by exhausting the ergot of rye with distilled water, and treating the aqueous extract with alcohol, &c., I have discovered in combination with an acid a volatile alkaloid, which is very similar to, if not identical with coniine. It is to this alkaloid that the ergot of rye appears to owe principally its effectiveness, and not, as has hitherto been admitted, to ergotine. Besides this alkaloid, I have found as constituents of ergotine an exceedingly small quantity of kinovic acid, formiate and chloride of potassium.—[See page 105.]—*London Chem. Gaz., from Central Blatt.*

On the administration of Cod-Liver Oil.—We extract from the *Gazette Medicale de Lyons* the following modes of exhibiting this nauseous remedy:

1. Cod-liver oil, 30 grammes; solution of carbonate of potash, 8 grammes; syrup of orange-peel, 30 grammes. Mix. A teaspoonful or two twice a day.

2. Cod-liver oil, syrup of orange-peel, aniseed water, equal parts. Mix. a tablespoonful for a dose.

3. Cod-liver oil, 250 grammes; gum arabic, 30 grammes. Make an emulsion, and add syrup of orange-peel, syrup of peppermint, each 30 grammes. A large tablespoonful for a dose.

. The disagreeable flavor of the oil may be disguised by hot milk or coffee.

Prov. Med. and Surg. Journ., from Revue Med. Chirurg.

Bromohydric Ether—a new Anæsthetic Agent.—Some experiments have been recently made with this substance on birds, etc., and M. Ed. Robin, who conducted them, is satisfied that it will prove an excellent anæsthetic agent. This preparation of ether is without taste, and possesses an agreeable aromatic odor; and, when taken by inhalation, produces rapid etherization, without any subsequent suffering or distressing symptoms.—*Journ. des Connaiss. Med. Chirurg and Charleston Med. Jour.*

Cannabis Indica as a substitute for Ergot. By Professor Christison.—Dr. Christison, of Edinburgh, considers Indian hemp (Cannabis Indica) to possess a remarkable power of increasing the force of uterine contraction during labor. He reports, in the August number of the *Edinburgh Journal of Medical Science*, some cases in which it was given, with this view, at the Maternity Hospital of Edinburgh. As compared with the action of ergot, that of Indian hemp presents the following points of difference: 'First—While the effect of ergot does not come on for some considerable time, that of hemp, if it is to appear, is observed within two or three minutes. Secondly—The action of ergot is of a lasting character, that of hemp is confined to a few pains shortly after its administration. Thirdly—The action of hemp is more energetic, and perhaps more certainly induced, than that of ergot.'—*Charleston Med. Jour. Jan.* 1852.

Solution of Phosphate of Iron and Quinine. By Dr. Cattell.—I have much pleasure in directing the attention of the profession to the therapeutical employment of a compound, formed of phosphoric acid, pure quinia, and hydrate peroxide of iron—solution of phosphate of quinine and iron. It was devised by me during the past year, and from an extensive trial of it, since that time, I am enabled to recommend it as a remedy likely to prove highly serviceable in those cases indicating the use of such a combination. As much uncertainty exists respecting the chemical relations of phosphoric acid, and the different bases, it is to the therapeutical and not to the chemical value of this compound that I attach importance. I shall avail myself of the earliest opportunity of making further observations on the subject.—*London Lancet and Charleston Journ.*

Solution of Aloes and Soda. By Professor Mettauer.—In this preparation the aloes is held in solution and its action modified by the presence of bicarbonate of soda. It is a useful aperient for persons of costive habit,

and may be employed without the unpleasant effects that sometimes result from the employment of aloes alone.

Take	Socotrine Aloes,	two ounces and a half, *troy*;
	Bicarbonate of Soda,	six ounces;
	Compound Spirit of Lavender,	two fluid ounces;
	Water,	four pints.

Macerate the mixture for two weeks with occasional agitation, and filter.

The dose is from a fluid drachm to a fluid ounce half an hour after meals.

Sumbul Root.—This root has usually been brought to England, *viâ* Russia, or from Russia. Some time since a box of the root arrived from India; and recently some tins of it have been received here from Bombay, per Overland Mail. The owner states that it cost him a great deal of money on account of the enormous distance from the interior which it had to be brought.

The *Indian Sumbul* differs somewhat from the Russian sort. The root has a closer texture, is firmer, denser, and has a more reddish tint. Some of the pieces have a slight resemblance to inferior rhubarb. The *Russian Sumbul* is more spongy, paler colored, with a yellowish green tint.

Both sorts have the same musky smell; but the Russian sort is perhaps more powerfully odorous.—*Pharm. Journ.*

Preparation of Tea. By Berthold Seemann.—In the *Manual of Scientific Inquiry* you ask whether, in the northern provinces of China, Indigo or any other vegetable dye is used in coloring green tea? Whether different processes of dying are pursued in the north from those of the south I cannot say, but it is certain that around Canton, whence great quantities are annually exported, the green tea is died with Prussian blue, turmeric, and gypsum, all reduced into fine powder. The process is well described by Sir John F. Davis (*The Chinese*, vol. iii. p. 244, *et seq.*,) who, however, falls into the strange mistake of supposing the whole proceeding of coloring to be an adulteration, and leaves his readers to infer that it is only occasionally done in order to meet the urgency of the demand, while it is now very well known that all the green tea of Canton has assumed that color by artificial dyeing. I had heard so much about tea—copper-plates, picking of the leaves, rolling them up with the fingers, boiling them in hot water, &c. &c.,—that I became anxious to see with my own eyes the process of manufacture, of which the various books had given me such a confused idea. One of the great merchants conducted me not only to his own but also to another establishment, where the preparation of the different sorts was going forward. There was no concealment or mysterious proceeding; everything was conducted openly, and exhibited with great civility; indeed, from all I saw in the country I am almost inclined to conclude that either the Chinese have greatly altered, or their wish to conceal and mystify everything, of which so much has been said, never existed.

The tea is brought to Canton unprepared. After its arrival it is first subjected to cleaning. Women and children are employed to pick out the pieces of twigs, seeds, and other impurities with which it happens to be intermixed. The only sorts which may be called natural are those gathered at different seasons: the rest are prepared by artificial means. Without entering into a description of all these processes, it may suffice to take one as an example. A quantity of *Bohea Saushung* was thrown into a spherical iron pan kept hot by means of a fire beneath. These leaves were constantly stirred about until they became thoroughly heated, when the dyes above mentioned were added, viz: to about twenty pounds of tea, one spoonful of gypsum, one of turmeric, and two or even three of Prussian blue. The leaves instantly changed into a bluish-green, and, having been stirred for a few minutes, were taken out. They, of course, had shrivelled and assumed different shapes from the heat. The different kinds were produced by sifting. The small longish leaves fell through the first sieve and formed Young Hyson, while those which had a roundish granular shape fell through last, and constituted Choo-cha, or gunpowder.—*Hooker's Jour. of Botany in Pharm. Journ.*

On the Jipijapa, or Panamá Hat Plant. By M. Berthold Seemann.—An indigenous production deserving special notice is the *Jipijapa* (*Carludovica palmata*, R. et Pav.,) a palm-like plant, of whose unexpanded leaves the far-famed "Panamá hats" are plaited. This species of *Carludovica* is distinguished from all others by being terrestrial, never climbing, and bearing fan-shaped leaves. The leaves are from six to fourteen feet high, and their lamina about four feet across. The spatha appears towards the end of the dry season, in February and March. In the Isthmus, the plant is called *Portorico*, and also *Jipijapa*, but the latter appellation is most common, and is diffused all along the coast as far as Peru and Chili; while in Ecuador a whole district derives its name from it. The *Jipijapa* is common in Panamá and Darien, especially in half-shady places; but its geographical range is by no means confined to them. It is found all along the western shores of New Granada and Ecuador; and I have noticed it even at Salango, where, however, it seems to reach its most southern limit, thus extending over twelve degrees of latitude, from the tenth N. to the second S. The Jipijapa, or Panamá hats, are principally manufactured in Veraguas and Western Panamá; not all, however, known in commerce by that name are plaited in the Isthmus; by far the greater portion is made in Manta, Monte Christi, and other parts of Ecuador. The hats are worn almost in the whole American continent and the West Indies, and would probably be equally used in Europe, did not their high price, varying from two to 150 dollars, prevent their importation. They are distinguished from all others by consisting only of a single piece, and by their lightness and flexibility. They may be rolled up and put into the pocket without injury. In the rainy season they are apt to get black, but by washing them with soap and

water, besmearing them with lime-juice or any other acid, and exposing them to the sun, their whiteness is easily restored. So little is known about these hats, that it may not be deemed out of place to insert here a notice of their manufacture. The "straw" (*paja,*) previous to plaiting, has to go through several processes. The leaves are gathered before they unfold, all their ribs and coarser veins removed, and the rest, without being separated from the base of the leaf, is reduced to shreds. After having been put in the sun for a day, and tied into a knot, the straw is immersed into boiling water until it becomes white. It is then hung up in a shady place, and subsequently bleached for two or three days. The straw is now ready for use, and in this state sent to different places, especially to Peru, where the Indians manufacture from it those beautiful cigar-cases, which fetch sometimes more than $30 apiece. The plaiting of the hats is very troublesome. It commences at the crown and finishes at the brim. They are made on a block, which is placed upon the knees, and requires to be constantly pressed with the breast. According to their quality, more or less time is occupied in their completion: the coarser ones may be finished in two or three days, the finest take as many months. The best times for plaiting are the morning hours and the rainy season, when the air is moist: in the middle of the day and in dry clear weather, the straw is apt to break, which, when the hat is finished, is betrayed by knots, and much diminishes the value.—*Ibid.*

An Improved Mode of Preparing Caffein. By H. J. Versmann, Apothecary, Lubeck.—All the authors have prepared caffein from good Brazilian coffee, and have operated on quantities of five, ten, and one hundred pounds. In the preparation of caffein, the direction is usually given to boil the raw coffee-berries, to combine it with oxide of lead, and then to separate it by sulphuric acid. This plan the author has tried, but has found it rather unprofitable, and has gained but little profitable results. By the boiling, the gum, and the mucus with which the oil is combined in coffee, were dissolved, and the separation of the pure caffein is rendered difficult. On the other hand, he recommends the following process, as simple and suitable to the purpose:—Ten parts of bruised coffee are mixed with two parts of caustic lime, previously converted into hydrate of lime. This mixture is placed in a displacement apparatus, with alcohol of 80°, until the fluid which passes through no longer furnishes evidence of the presence of caffein. The coffee is then roughly ground, and brought nearly to the state of a powder, and the refuse of the already once digested mixture from the displacement apparatus dried, and ground again, and, mixed with hydrate of lime, is once more macerated. The grinding is more easily effected after the coffee has been subjected to the operation of alcohol, having lost its horny quality, and the caffein is thus certainly extracted. The clear alcoholic fluid thus obtained is then to be distilled, and the refuse in the retort to be washed with warm water to separate the oil. The resulting fluid is then evaporated until it forms a crystalline mass, which is to be placed on a

thick filter, and the moisture expressed. The moisture, after evaporation, still furnishes some caffein. The impure caffein is freed from oil by pressure between folds of blotting paper, and purified by solution in water with animal charcoal, and is afterwards obtained in shining, white, silky crystals. In general, not more than three drachms were procured from five pounds of coffee, from ten pounds seven drachms, and from one hundred pounds, the largest quantity, viz: six ounces and four scruples of caffein; a proof that a large quantity must be operated upon if, in a quantitative respect, a satisfactory result is to be obtained. Thus it is seen, that good Brazilian coffee contains 0.57 per cent. of caffein. At the same time it may be observed that it contains about ten per cent. of a green liquid oil, and two per cent. of a yellow, firm fat (Palmtin.)—*Phar. Journ. and Archiv der Pharmacie*, November, 1851.

Filter Accelerator.—M. Dublanc describes an arrangement to accelerate the filtering process, which consists of a funnel-shaped tissue of plated or tinned wire on which the filter is supported in the funnel. It is shaped like a plaited filter, and is made from a flat circular piece of wire gauze, crimped in plaits running from centre to circumference so as to give it the shape of a funnel with fluted sides.—*Journ. de Pharm.*, February, 1852.

A New Test for Mercury.—If a strong solution of iodide of potassium be added to a minute portion of any of the salts of mercury, placed on a clean bright plate of copper, the mercury is immediately deposited in the metallic state, appearing as a silvery stain on the copper, which cannot be mistaken, as no other metal is deposited by the same means.

By this method corrosive sublimate may be detected in a drop of solution unaffected either by caustic potash or iodide of potassium. In a mixture of calomel and sugar in the proportion of one grain to two hundred, a distinct metallic stain will be obtained with one grain, which of course contains 1-200th of a grain of calomel; in like manner 1-400th of a grain of peroxide of mercury may be detected, although the mixture with sugar is not in the least colored by it.

With the preparations of mercury in the undiluted state, this process acts with remarkable accuracy, the smallest possible quantity of calomel or peroxide of mercury, such as would almost require a magnifying lens to perceive, placed on copper and treated with iodide of potassium, will give a distinct metallic stain.

The advantages of this test may be briefly stated as follows:—1st. It is a delicate test, inferior only to chloride of zinc and the galvanic test of zinc and gold. 2d. It is easy of application. 3d. It requires a very small portion of the substance to be examined—a matter of no small import. 4th. Acting on the insoluble as well as the soluble salts, it obviates the intermediate process of solution. 5th. When it acts its indications are decisive.

As to its disadvantages, the only one which seems tenable is, that

although it acts on minute portions, still that must be in a concentrated condition. For instance, though we may detect the 1-1000th of a grain of corrosive sublimate in a drop of water, we cannot detect it in a drachm; but this may of course be remedied by evaporation.

Now, with regard to the theory of this process, the following seems most satisfactory, that the iodide of potassium forms a soluble and easily decomposed salt with the various salts of mercury; that is, an iodide soluble in excess of the iodide of potassium.

The foregoing is the substance of a paper read by Mr. Arthur Morgan, City of Dublin Hospital, at the first meeting of the Student's Medico-Chirurgical Society, on Friday, December the 12th, 1851.—*Pharm. Journ., Feb.* 1852, *from Dublin Medical Press*, 1852.

[We have tried this test with several poisonous preparations of mercury, as white precipitate, turpeth mineral, etc., and find it extremely sensitive. A drop of distilled water on a bright penny, with a grain of iodide of potassium dissolved in it, gave a positive indication of mercury when one-eighth of a grain of sugar containing 1-3200ths of a grain of white precipitate was added to it.—*Ed. Am. Journ. Pharm.*]

Comparative Value of Cod-Liver Oil and Fish Oil mixed with Iodine.—Dr. Champouillon, professor at the Army Medical School of Val de Grace, has just laid before the Academy of Medicine the result of the comparative experiments he has made upon phthisical patients with cod-liver oil, and simple fish oil mixed with iodine. Dr. Champouillon gave the cod-liver oil to 120 patients laboring under phthisis. Fifty-one were in the first stage; and of these, twenty-four were benefitted, and none died. Thirty-seven were in the second stage; of these, nine recovered, and three died. Fourteen were in the third stage; and here six recoveries and four deaths took place. The author gave the iodated oil to seventy-five patients in different stages of phthisis: no improvement took place in any case, and in several it was noticed that the remedy did harm.—*Lancet.*

Cost of the Doctorate in Paris.—The Union Médicale makes the following estimate of the cost of the Degree of Doctor of Medicine in Paris:—The collegiate education requires 7 years, and to obtain the two baccalaureate degrees, 2 years more are necessary; then the medical studies, properly speaking, will average 6 years; making a total of 15 years. The 7 years at college cost 1000 francs per annum, making 7000 francs; the 2 baccalaureates, 320 francs; the 6 years at medical college, 1200 francs a year, or total 7200 francs. Private courses of study, 1000 francs; matriculations, examinations, and diploma fee, 1100 francs; instruments and books, 2000 francs. Making a grand total of 18,620 francs, or about $3,724.—*Med. Exam.*

Arabian and Cyprian Aloes.—Dr. X. Landerer states that much of the aloes employed in the East is produced in Arabia, where various species of

aloë grow in considerable abundance. The drug is rudely manufactured by the Arabs from the expressed juice, and is then carried to the bazaars of Alexandria, Cairo, Smyrna, &c.

The aloes produced in the island of Cyprus, though excellent in quality, is stated not to be prepared in sufficient quantity to admit of its being exported.—*London Pharm. Journ.*

Note on the Oil of Geranium having the Odor of Roses, (Pelargonium odoratissimum).—The geranium which has the odor of roses will yield on distillation *an aromatic water and an essential oil.* M. Recluz, a Chemist at Vaugirard, has stated, that previous to the year 1819, he had, by order of M. Tissier, Chemist and Professor of Chemistry at Lyons, submitted to distillation 1590 grammes of the leaves of this plant, operating by cohobation twice, he obtained eight grammes of a concrete volatile oil, analogous, in its odor, to that of the rose, congealable at 18° C.

Since the publication of M. Recluz, this question has made rapid progress, for there is now prepared in France a large quantity of the essential oil of geranium, which is used in perfumery.

The geranium, to obtain the essence, is cultivated in the south. It has also been cultivated in the department of Seine-et-Oise, at Montfort-Lamaury, and, according to M. Demarson, who has occupied himself and given much attention to this subject, its cultivation is easy; under our temperature the geranium thrives, especially when the nights are fresh.

The oil obtained in the department of Seine-et-Oise, is more agreeable in its odor than that obtained from the geranium cultivated in the south; the same is remarked with the geranium as with the orange flower.

The geranium is propagated by slips. These slips are planted usually in February, but they may be planted at any season.

100 lbs. of geranium leaves yielded from 54 to 55 grammes of essential oil; these leaves are sold at from 30 to 35 francs the 100 lbs., but care must be taken in the weighing, as they are not always well picked, and contain foreign matter, which increases the weight but does not yield oil. The distilled water which has been used in the production of the oil has some analogy to rose water, but it has a *vegetable odor*—an odor *sui generis*—which distinguishes it from it. This water, which was at first sold at 1 franc 25 cents the litre, has fallen to 60 centimes the litre.

The oil of geranium was, in the first instance, sold at a very high price; it has since fallen to 30 francs, to 25 and 20 francs, at last to 15 and to 12 francs.*

The oil of geranium of the Paris houses is of a green color; that of Nice is colorless. This oil is employed in the manufacture of essence of roses, which is very expensive. After having been used for adulterating, it is in its turn adulterated.—*London Pharm. Journ., from Journ. de Chimie Médicale.*

*It is not stated for what quantity this price is charged.—Ed. *Pharm. Journal.*

Magnesia as an Antidote for Poisoning with Copper.—M. Roncher, in an article upon this subject, in the Gazette Medicale de Strasbourg, draws the following conclusions, from experiments he has made:

1st. The calcined magnesia will arrest entirely the symptoms of poisoning with copper, if it be administered sufficiently soon after the copper has been taken.

2d. That the dose of magnesia necessary to neutralize the salt of copper, is eight grammes of magnesia to one of sulphate of copper.

3d. That as magnesia prevents the formation of the greenish, soluble salt, it is quite probable that it will act as an antidote to all the salts of copper.—*Southern Med. and Surg. Journ., from Revue Medicale, Aug.* 1851.

A New Method for Preventing Fat and Fixed Oils from becoming Rancid. By CHARLES W. WRIGHT, M. D., of Cincinnati.—In company with one of the early settlers of this part of the United States, the conversation turned upon the history and habits of the Indians formerly living in this valley, and among other things he mentioned the curious manner in which they preserved bear's fat from becoming rancid, of which the following is a brief account: In the early part of winter the fat is removed from the body of the animal and subjected to the *trying-out* process, as it is termed; that is, it is subjected to a degree of heat sufficient to coagulate and separate the azotized matter which subsides to the bottom of the vessel, and the oil is drained off. After this operation is completed, it is melted again with the bark of the slippery elm tree, (*ulmus fulva,*) finely divided, which may be used either in the fresh or dry state. The proportion is about one drachm of the bark to the pound of fat. When these substances are heated together for a few minutes, the bark shrinks and gradually subsides, after which the fat is strained off and put aside for use.

The bark communicates an odor to the fat that is hardly to be distinguished from that of the kernel of the hickory nut.

Thinking this might be turned to account in the preservation of the fatty matters, I subjected many of them to experiment, and in every instance the result was alike successful. One specimen of butter, (an article which it is well known becomes rancid sooner than any other kind of fat,) prepared in this way more than a year ago, is as sweet, and as free from disagreeable odor, as the day it was made, having been exposed all this time to the atmosphere and change of temperature.

Hog's lard may be preserved in the same manner.

This fact will be of much importance in the preparation of cerates and ointments, which can be thus protected from rancidity.

In the lubrication of delicate machinery an acquaintance with this fact may be of benefit by preventing the injury that results from the use of rancid oil.—*Western Lancet.*

Minutes of the College.

At a stated meeting of the Philadelphia College of Pharmacy held 9th month 29th, 1851. Present, 22 members.

Daniel B. Smith, President, in the Chair.

The Minutes of the last stated meeting and of the Board of Trustees were read. From the latter, it appears, that Charles H. Dingee has been elected a Resident member, and Joseph Laidley, of Richmond, Va., an Associate member of the College.

The Committee appointed to examine the subject of members in arrears for annual contributions, reported that they had intercourse with most of those who are accessible, and had generally made settlements with those who were indebted to the College.

The following Resignations were offered with the recommendation of the Committee that they be accepted—viz: Alexander Ardley, Peter Babb, Jacob L. Baker, James H. Crew, Edwin Meredith, Albert S. Letchworth. The Committee further recommended that the following members, several of whom have permanently left the city, be released from membership, viz: Benjamin J. Ritter, Elwood Wilson, Linnæus R. Gilliams, James W. Simes, Franklin R. Smith, Henry W. Gillingham.

The Report of the Committee was accepted, and they discharged from the further consideration of the subject.

A Report from the Committee on Latin Labels was read and accepted.

The resignation of John C. Allen, informing that he had given up the Drug business, and desired to withdraw from membership, was read, accompanied by the required information from the Treasurer that he was not in arrears to the College. Much unwillingness being expressed to part with a member so long associated with the institution, and who had been so useful to it, especially as Chairman of the Committee on Latin Labels, it was unanimously Resolved, as a testimonial of our respect for him, and appreciation of his services, to continue him a member, and to remit in advance all further fees and contributions that would accrue from him to the College.

On motion, Edward Parrish was appointed to the Committee on Latin Labels in place of John C. Allen resigned.

The following Communication from the College of Pharmacy of New York was received and read.

COLLEGE OF PHARMACY OF THE CITY OF NEW YORK.

New York, Sept. 9th, 1851.

To the Philadelphia College of Pharmacy.

Gentlemen,—Herewith we have the honor of submitting to you a copy of the Preamble and Resolutions, adopted at a stated meeting of the Board of Trustees, on the 4th inst.

Our College has, upon several occasions during the past year, had under consideration the subject of established and uniform standards for Imported Drugs and Medicines, by which their admission should be regulated alike, at all the ports of the United States. It is evident, that the important law to prevent the importation of adulterated Drugs and Medicines, cannot exert its full salutary effect, unless the best practicable standards of quality are fixed, uniformly demanded, and generally understood.

With the hope of promoting this desired improvement, our College, last spring, made a proposition to the other Colleges of Pharmacy, to meet in convention at New York to consult on the matter, with the object, at that time, of laying such propositions as might be agreed upon, before the National Medical Convention at Charleston. The notice was short, however; and though we received interesting communications from Philadelphia, Baltimore and Boston, yet no delegates from other cities attended. A report, presented by our delegates, was submitted to the National Convention. The proposed establishment of standards was there fully approved; and it was the opinion of that body, that the subject was fitly the province of the Pharmaceutical profession.

Since that time, notices more or less favorable to a convention of the Colleges in the fall, have appeared in several quarters. As the proposal first emanated from New York, it seems, by general consent, to have been left to New York for renewal. In regard to time and place, we have been governed by most of the suggestions we have received from those interested in other quarters. We shall be pleased to hear whether they are acceptable to you, and that we may expect the pleasure of meeting you, and the benefit of your suggestions—the results of your judgment and experience.

The Committee propose that the Convention should meet at 5 o'clock, P.M. (Wednesday, 15th of October,) at the College Rooms, No. 511 Broadway.

Please address,

Yours, very respectfully,

GEO. D. COGGESHALL,

809 Broadway.

On motion, the letter and Resolutions of the New York College of Pharmacy were directed to be entered on the minutes. The merits of the propositions contained therein were fully discussed, and it was thereupon Resolved, to appoint three Delegates to meet the proposed Convention in New York, with power to fill vacancies. Charles Ellis, William Procter, Jr., and Alfred B. Taylor were accordingly appointed.

The semi-annual Election for eight members of the Board of Trustees was held. Jacob L. Smith and Francis Zerman were appointed Tellers; who reported that the following named gentlemen were elected for one year. Thomas P. James, Jacob L. Smith, Alfred B. Taylor, John Harris, M. D., William J. Jenks, Joseph Trimble, Charles Bullock, Henry C. Blair.

Then adjourned.

DILLWYN PARRISH,

Secretary.

Editorial Department.

The Report of a joint Committee of the Philadelphia County Medical Society, and the Philadelphia College of Pharmacy, relative to physician's prescriptions, published in our last number as adopted by the College of Pharmacy, was on the 20th of January unanimously adopted by the County Medical Society with the following *proviso*, viz:

"That nothing therein contained shall be construed into any sanction or countenance, direct or indirect, on the part of this Society, of the manufacture, sale, or use, by any one under any pretext, of quack or secret medicines."

Wild Cherry Bark.—We would call the attention of druggists and apothecaries to the important fact, determined in the essay on Wild Cherry Bark at page 109, that the Autumn is the proper period for collecting this bark, as at that season the proximate principles which give rise to its most important medicinal power, are then most abundantly secreted.

American Narcotic Extracts.—The Essay at page 111, on the Extracts of European Narcotics of American growth, has peculiar interest to the Physicians and Pharmaceutists of this country, and we hope the subject will be continued on a larger scale and during a longer period. We should not be indebted to Europe for these agents, when the material for preparing them is at our doors.

Poisoning by Bichloride of Mercury. *A Broken Staff.*—Dr. C——, of Roxbury, in a communication to the *Boston Medical and Surgical Journal for Feb. 25th*, details the *treatment* in a case of poisoning where the patient, Mrs. T——, had swallowed about a teaspoonful of corrosive sublimate.

It appears that Dr. C——, when called in, was informed that the patient had swallowed the poison, and he at once administered a drachm and a half of sal æratus (impure bicarbonate of potassa) in half a pint of water, the object of which, he observes, *"it will be at once perceived was to form a chemical union of the alkali with the acid of the poison and thus render the mercury comparatively harmless"* (*!*) After repeating this prescription, and finding his patient still vomiting, he directed the *whites of a dozen eggs* to be given as fast as the circumstances would admit, followed by *flour and water*.

We here learn for the first time that such a solution of bicarbonate of potassa will *saturate the acid of corrosive sublimate*, or decompose it immediately in any way so as to produce an inert compound; and we cannot but admire the wisdom displayed by Dr. C. in giving the *real antidotes* along with the spurious one; yet as the suggestion may meet the eyes of other physicians, not more familiar with chemical reactions than its author, and perhaps induce them to waste important time by depending on it, we have felt it a

duty to point out the error, which doubtless has appeared to many other readers of the Boston Journal.

In order that our criticism should be based on more than previous recollection of the subject, a solution prepared as Dr. C. directs was mixed with one of corrosive sublimate, and after 24 hours no evidence of decomposition was apparent, except the deposition of a very minute precipitate of the oxychloride of mercury ($HgCl_2 + HgO$, which requires time for its formation, and which is also poisonous,) the solution affording a copious precipitate of bin-iodide of mercury on adding iodide of potassium. Pearl ash would have decomposed the corrosive sublimate and precipitated it as oxychloride at once, but it would only have rendered the poison less active, and by no means inert.

ART *vs.* NATURE.—The philosopher equally with the little child will sometimes swallow sugar plumbs and be deceived by their contents. The Philadelphia World, and perhaps "the rest of mankind," have been dosed with a new order of acidulated sugar drops, purporting to be flavored with essences prepared artificially in a scientific manner by chemical means; whilst enjoying their tangible qualities in the region of the palate, the pleasure of some has been increased by a proud sense of the triumph of Chemistry, in thus vieing with nature in the production of her most agreeable delicacies. To a large extent this feeling is in harmony with truth, as several of the flavors *are solely* the products of the chemist's science and the manufacturer's art, whilst others are jointly the production of nature and art. The so-called *jargonelle pear essence* is obtained by distilling together the oil of grain (a disagreeable residue in the distillation of whiskey) acetate of potash and oil of vitriol, as described at page 38, in our last number. The pine apple flavor is chiefly the butyric ether, an oily liquid obtained by fermenting a mixture of sugar, sour milk, a little old cheese and some chalk in powder, at a temperature of 86° to 93° Fahr. as long as any gas is evolved, say for five or six weeks. During the fermentation the butyric acid which is formed is neutralized by the chalk, and remains in solution as butyrate of lime. This solution is strained, decomposed by the careful addition of carbonate of soda so as to form a butyrate of soda, which remains in solution, whilst carbonate of lime precipitates with some coloring matter;—the solution is then concentrated by careful heat to a semi-syrupy consistance, and distilled with a mixture of sulphuric acid and alcohol to obtain the butyric ether in an impure state. If wanted in a purer state, the impure syrupy butyrate of soda must be distilled with sulphuric acid alone, and the acid thus obtained after saturation with soda, is distilled with sulphuric acid and alcohol.

Butyric ether is remarkable for having what may be termed a *fruity* odor and taste, and it is this quality, modified by the addition of certain other substances that renders it useful for the purposes of the confectioner. For instance, butyric ether and the jargonelle essence (acetate of oxide of amyl)

forms the *banana* flavor—and when modified in other ways produces the artificial strawberry and other flavors. We have noticed that the valerianic aldehyde, which comes over with valerianic acid in the distillation of fusel oil with sulpho-bichromate of potash, has a strong fruity odor which might be taken advantage of in imitating fruit flavors. Pure hyponitric ether is another substance that may be used; and some persons have noticed a resemblance between this ether and the flavor of some varieties of apples. This subject is just opening to the chemist, and will doubtless admit of a considerable expansion. When it is remembered that he can make the delightful teaberry oil (gaultheria procumbens) from wood naphtha and willow bark, and the agreeable perfume of the *meadow sweet* from the bark of the poplar, we should not despair of seeing many other natural productions of this class rivalled in the laboratory.

Fruit essences sold as strawberry, pineapple, apricot, quince, raspberry, green gage, mulberry, black current, &c., and which are used for flavoring syrups, jellies, blanc mange, cordials, etc.—are manufactured in England by Mander, Weaver & Co., of Wolverhampton, and to some extent in this country. Strawberries, raspberries and some other fruits yield an agreeably odorous product by distillation which *may* be capable of concentration. With butyric ether as a base, these products might afford successful imitations of the fruit. always of course using a portion of citric or tartaric acids. Why cannot some of our young pharmaceutists investigate the subject?

Returning to the sugar plumbs, the *lemon, orange, vanilla* and many other flavors are *yet* derived from natural sources, yet even these are said to be much improved by the addition of butyric ether.

Doctor Weddell.—From an interesting paper on the present condition of botanical literature, by Professor A. Gray, in Silliman's Journal, for January, 1852, we learn that Dr. Weddell, whose reputation as the author of the best monograph on the Cinchonas of Peru that has yet appeared, has again returned to South America to continue his explorations in the same regions. The success attending his first visit is an earnest of a rich contribution to medical botany, should this talented gentleman be favored to return safely to his adopted country. Dr. W. is an Englishman by birth, but is now one of the aid-naturalists of the *Jardin des Plantes.*

Pharmacy in Richmond, Va.—We learn from the *Stethoscope* that all but two of the druggists and apothecaries of Richmond have agreed to subscribe to the code of ethics promulgated by the Richmond Medical Society—which code closely resembles that of the Philadelphia College of Pharmacy. We hail this as the beginning of a new order of things in the Virginian metropolis, and hope that steps will be taken to form a society of apothecaries before the meeting of the Convention in October. A number of young gentlemen from Virginia have graduated at our College with marked credit, and it will not be surprising if ere many years, some of the stanchest

columns of our Professional Edifice should arise from the cities of the Old Dominion.

Pharmacy in Louisville.—Louisville is one of the medical and pharmaceutical centres of the Great West. We are informed that the druggists and apothecaries of that city are on the eve of forming an association, also that the condition of the practice of pharmacy has very much advanced within a few years. To our brethren of Louisville, as to those of every American city, where associations do not exist, we would say:—Institute a Society; the amount of private interests that will have to be surrendered will not amount to a tythe of the benefits accruing to the members when such associations acquire solidity, by a few years experience.

Convention of 1852. What steps have been taken?—Nearly six months have passed since the meeting of the New York Convention in October last; six months more will bring us to the period of the proposed gathering, and it is entirely proper to put the query—*What has been done to promote the object in view?* We are not disposed to believe that, with the most favorable happening, an instantaneous change can be wrought in the condition of our professional ranks; but we *are* prepared to avow the opinion that the character and actions of the ensuing Convention, small though it may be, will very much influence the future movements arising from them, and that delegates should be chosen whose experience, ability, and disinterested sympathy for the Profession, will induce them to place their best powers at the service of the Convention.

The important questions for deliberation are not personal: individual honors, and love of popularity, are too apt on such occasions to obtrude themselves into the foreground: but they are such as these:—1. By what means can the existing large number of ill qualified practicing pharmaceutists, every where over our country, be induced to improve themselves in education, or in the ability to give better service in their several spheres of action, without omitting their present duties? 2. What are the most efficient and best adapted means by which our apprentices,—the pharmaceutists of the future,—can receive the benefits of pharmaceutical education. 3. How far will the principle of association enable the better qualified to extend assistance to the deficient? 4. What means are best calculated to sever the existing connection between pharmacy and quackery, and to induce apothecaries to repudiate the sale of secret remedies? And lastly what suggestions can be offered to the Convention, by which it may hold out inducements sufficient to engage and direct the latent talent of our ranks, to such useful and interesting scientific objects as shall redound to the improvement of our profession at home, and its reputation abroad?

These are a few of the questions, which will naturally present themselves before the earnest delegate, and to the solution of which he will bring his

best exertions. The Communication at page 133 will be read with interest; it is an indication that the subject is engaging attention. Our columns are open to all who desire to be heard, and we would invite our brethren at a distance to use them if they have aught to suggest or to enquire.

Extracts Prepared in Vacuo.—We have received a communication from the Messrs. Tilden, in reference to a paragraph in our notice of the Shaker establishment at New Lebanon, published in the January number of the Journal, calling in question the correctness of the statement. We are not disposed to throw our columns open to the controversy of rival manufacturers, yet as the statement involves to some extent the priority of application of an important improvement in the manufacture of extracts, we will publish so much of the communication as is necessary to set the claims of the authors in a clear position.

To the Editor of the American Journal of Pharmacy

Our attention has been called to the following extract from a communication to you by M. Fowler, of the Society of Shakers at New Lebanon, N.Y., published in your Journal of January 1852, page 90.

"As not a member of our community had the *least* knowledge that medical extracts had ever been manufactured in America by that process at the time our apparatus was built."

The public are here explicitly informed that not a member of their community had the *least knowledge* that medicinal extracts were prepared in vacuo in this country, at the time the apparatus was built, to which they refer. Are we to infer that to them belongs the credit of being the first to employ it in this country?

We owe it alike to yourself, and the public, to expose the mistatements of their article, as well as to ourselves, to place upon record, as a matter of history, the facts connected with the erection of the first vacuum apparatus in this country, for the manufacture of extracts upon an extensive scale. While engaged in the preparation of medicinal extracts in the ordinary mode, our attention was called by gentlemen of science to the general inertness of such preparations, which led to a thorough investigation of the subject, and a determination to commence their preparation in vacuo. We examined all the many plans and inventions in use for other similar arts, and late in the fall of 1847 matured the plan now in use by us; the ensuing winter and spring, (1848) was occupied in the erection of our manufactory; and the summer, in the erection of the apparatus and machinery; the remainder in experiments; producing only a few hundred pounds. In the spring of 1849, we started our works into successful operation, and continued so until December, producing several thousand pounds of extracts. The apparatus not being of sufficient capacity, we made, during the winter of 1849—50, additions increasing its capacity five-fold. In April of 1850 we started our works and continued in operation until the winter, when we again suspended operations for a month, to make further alterations in the apparatus; since that time our works have been in almost constant operation, making from that time nearly twenty thousand pounds of extracts.

The [Shaker] family referred to is within about a mile of our manufactory at New Lebanon, situated upon a hill overlooking it, and almost daily some of the family pass by. It was well known at New Lebanon and in this city that the extracts we were preparing, and putting up in an entirely different style,

were made in vacuo; they were the subject of comment and commendation by the profession of this city, as well as by druggists generally.

Messrs. Tilden further observe, that "while our manufactory was in process of erection, members from the family of M. Fowler visited our works, and knew we were engaging in the manufacture of extracts by a 'new process,' because they saw the apparatus, and made inquiries in regard to it and our manipulations, both before and after the erection of *their* apparatus, which occurred in the summer of 1850."

Soluble Citrate of Magnesia.—It should have been stated among other processes for obtaining soluble citrate of magnesia, at page 113, that when an aqueous solution of that salt is thrown into a large excess of alcohol, and rapidly agitated, the citrate is precipitated, deprived of most of its water, and may be separated and dried by a moderate heat, so as to remain soluble and neutral, the excess of acid being held in solution by the alcohol. In point of economy there is an objection to this mode of preparing the salt.

New York Journal of Pharmacy.—We have received the three first numbers of this periodical, which was announced in our last issue as about to be published under the auspices of the New York College of Pharmacy, with Prof. McCready for its Editor.

From the introductory chapter, we learn that New York is the commercial centre, the wealthiest and most populous city in the Union, possessing advantages of communication with foreign countries, and with other parts of our own country, unequalled by any other city; and moreover embracing within her borders several hundred apothecaries, among whom are many of great experience and eminent ability. From these premises it is argued she should also possess a Journal of Pharmacy; by which the observations of her pharmaceutists may become known to the world, and not lost, or retained within the precincts of the shop, as till now; and by which the younger members may be stimulated to give more attention to the scientific department of their art.

The numbers before us are of 32 pages, octavo, each, neatly printed on good paper, and altogether presenting a substantial and well began *physique*. Each number embraces several original articles, three of which have been transferred to our pages, and our readers will perceive that they have a practical aim.

From its expression thus far, it requires no reflection to decide that the tendency of the New York Journal will be favorable to the advancement of pharmacy, that it will oppose quackery and ignorance in our professional ranks, as well as at large, and that it will advocate a high standard of professional conduct. Thus impressed in regard to her, it is with a hearty good will that we tender the right hand of fellowship to our New York sister, and wish her success.

An Address on the occasion of the Centennial Celebration of the founding of the Pennsylvania Hospital, delivered June 10th. 1851. By GEORGE B. WOOD, M. D. Published by the Board of Managers. Philadelphia, 1851. pp. 141.

Rarely have we seen the history of a public institution so clearly, concisely and unostentatiously delineated, where the subject involved interests so important, and a period so extended in the past, as in this address of Dr. Wood. We have finished its perusal with a far better understanding of the origin, progress, and present position of the Pennsylvania Hospital, than ever before, albeit our opportunities have not been deficient. We believe every reader will have to acknowledge the debt due to our fathers, when he learns, through the interesting pages of this Address, the wide reaching benevolence which this Hospital, their bequest to us, is annually extending to hundreds of the maimed, the insane and the sick poor, restoring them to their families without cost, or charge; and whilst thus directly beneficial, (as the author justly observes,) thousands of the afflicted in distant places derive indirect relief, from the lessons there received, and the experience there gained by the numerous Graduates of Medicine who every season witness the treatment, and listen to the clinical instruction within its walls.

An appendix to the Address embraces the Charter, and By-laws, and lists of the Managers, Physicians, Contributors, etc. who have been connected with the Institution by service or contribution since its commencement, with the terms of service of each, and amount contributed by each of the latter.

The volume, is illustrated with two well executed engravings, the Hospital buildings in the City, and those of the Insane Department west of the Schuylkill, and a figure of the statue of Penn, is impressed on the cover.

A Notice of the Origin, Progress, and Present Condition of the Academy of Natural Sciences of Philadelphia. By W. S. W. RUSCHENBERGER, Surgeon U. S. Navy. *Read before the Society Feb. 10th,* 1852. pp. 78, octavo.

The work, of which the above constitutes the title page, is now before us, through the politeness of the author. Without claiming any pretensions to a regular history of science, it succinctly sets forth how it has happened that, within the last forty years, a scientific institution of very considerable magnitude, whether measured by the ability of its members, or the volume and value of its collections, has grown up within our city, without one dollar's contribution from the Municipal, or State, or National Government, through the untiring zeal of the votaries of science, assisted by the munificence of private patrons, until now, when its transactions have a European circulation, and, in some respects, its museum may vie with the noblest government-supported accumulations of Europe.

The museum embraces 148,876 specimens of natural history, whilst the library, which includes a most valuable collection of works on natural science, periodical and special, numbers 13,382 volumes. "The collection of birds, which is exhibited in the principal hall of the Academy, has grown

to be the most extensive, and the very best in the world," through the aid of many naturalists both American and Foreign, but most especially through the liberality of Dr. T. B. Wilson, whose contributions, by purchase, to this department alone, amount to more than 16,000 specimens, including the celebrated Rivoli collection formerly at Paris.

We have not space to enter into the very interesting particulars of the origin and progress of the Academy, an inability that we regret the less, since learning that the work of Dr. Ruschenberger can be procured at the Hall of the Academy.

Every American, and especially every Philadelphian, should be proud of this Institution, and should embrace every opportunity to add to its collections, remembering that scientific benefits are of universal application, and that, in the estimation of the naturalist, every production of nature has a value. There are many intelligent sea-captains, whom this account would stimulate to take advantage of the valuable opportunities that foreign voyages afford to make collections of natural objects, and we are glad to see that, among the numerous officers of the Navy, there are some instances of laudable zeal in this disinterested benevolence.

Review of Materia Medica for the use of Students. By JOHN B. BIDDLE, M. D., of Philadelphia. *With Illustrations.* Philadelphia: Lindsay & Blakiston, 1852; pp. 322, 12mo.

This volume is intended to assist the Medical Student in grasping the numerous important details of a prominent branch of his studies, by presenting the most important facts and principles, in a concise, clear, and explicit manner, so that after having applied himself, in his more leisure seasons, to the larger treatises, he can in a rapid and effectual manner recall directly before his minds eye the more important features of the subject, and indirectly, by association, the less striking facts.

From a general examination of the book, we believe this object has been accomplished with more than usual success, and that it will prove in practice a useful auxiliary to those for whom it is intended. It has the *merit* of not being so full as to induce the indolent to depend on *it alone*, and yet it is sufficiently comprehensive to serve as a valuable aid.

The Pocket Formulary, and Synopsis of the British and Foreign Pharmacopœias, comprising Standard and Approved Formulæ for the Preparations and Compounds employed in Medical Practice. By HENRY BEASLEY. *First American, from the last London edition, corrected, improved and enlarged.* Philadelphia: Lindsay & Blakiston, 1852; pp. 443. 12mo.

If the American Physician and Apothecary is not well posted up with recipes of all kinds, and all qualities, it is not the fault of the publishers. The real or apparent utilitarian tendency of such works, addresses itself to a large class of persons who wish to read with *profit*, not so much to their

understandings as to their pockets. The disposition of many practitioners of medicine to patronize the *new*, is a fruitful source of patronage to formularies and receipt books, especially by apothecaries, who, in addition to the desire to meet this *penchant* of the physician, have in view *new articles* addressed directly to the people, whether of medical or economical importance.

The formulary of Dr. Beasley, however, has, if we may use the expression, entirely a *pharmaceutico-therapeutical* direction, embracing, besides the authorized formulæ of the Pharmacopœias, numerous recipes for permanent and extemporaneous preparations, derived from various sources, which may often prove useful. Those who are unprovided with such a work will find this a useful addition to their books for constant reference.

Ranking's Half-Yearly Abstract of the Medical Sciences. No. 14. July to December, 1851. Philadelphia: Lindsay & Blakiston. pp. 296. 3vo.

We have received this comprehensive periodical from the publishers. As it is addressed almost entirely to the physician, it does not become us to speak critically of its value; a cursory glance at its contents, however, has induced the impression that its pages contain much useful information, interesting to the medical practitioner who does not receive a large income of periodical medical literature.

Physiological Chemistry. By Professor C. G. Lehmann. Vol. 1. *Translated from the second edition* by George E. Day, F. R. S. &c. London 1851. pp. 455. octavo. Printed for the Cavendish Society.

The volume of Dr. Lehmann's chemistry constitutes the first of the volumes for 1851- the second (6th vol. Gmelin's Chemistry) not having yet appeared. We will defer a notice of the work until our next issue, when it is proposed to give a sketch of the whole series of the Cavendish publications.

PHILADELPHIA COLLEGE OF PHARMACY.

At the Annual Examination of the School of Pharmacy, the following named gentlemen, having complied with the Rules of the College, and having passed a satisfactory examination by the Professors and Examining Committee, were declared, by the Board of Trustees, Graduates in Pharmacy.

Graduating Class.		*Subject of Thesis.*
Baker, T. Roberts	Virginia,	Secale Cornutum.
Burton, David F.	Delaware,	Stillingia Sylvatica.
Canedo, Cipriano	Mexico,	Imperatoria Ostruthium.
Davis, John L.	Philadelphia,	Chimaphila.
Gormly, George M.	Virginia,	Progress of Chemistry.
Hendel, Samuel D.	Philadelphia,	Geranium Maculatum.
Heyser, William	Pennsylvania,	Cornus Florida.
Holden, John	Pennsylvania,	Arctostaphylos Uva Ursi.
Jones, Alfred	Philadelphia,	Narcotic Plants of U. S.
Morris, J. H. M.	Kentucky,	Frasera.
Peltz, Richard	Philadelphia,	Syrup of Assafetida.
Perot, Joseph S.	Philadelphia,	Cortex Pruni Virginianæ.
Ritter, Bradford	Philadelphia,	Iron
Selfridge, Mathew M.	Pennsylvania,	Kalmia Latifolia.

The Annual Commencement of the College was held on Thursday evening, (March 18th) at eight o'clock, in the Sansom Street Hall, on which occasion the Degree of Graduate in Pharmacy was publicly conferred by Thomas P. James, Esq., Chairman of the Board of Trustees, on the successful candidates, in the presence of a large and respectable audience.

The Valedictory Address was delivered by Prof. William Procter, Jr.

A. B. TAYLOR,
Secretary of Board of Trustees.

A CATALOGUE OF THE STUDENTS

CONSTITUTING THE CLASS OF THE

PHILADELPHIA COLLEGE OF PHARMACY,

For the Session of 1851–2.

Agnew, Henry	Philadelphia,	Penn sylvania.
Alexander, Maurice W.	"	"
Bachman, Alexander,	"	"
Baker, Charles	"	"
Baker, T. Roberts,	Richmond,	Virginia.
Balliet, Louis	Lehigh Co.	Pennsylvania.
Barclay, James S.		Kentucky.
Beck, Abraham R.	Litiz,	Pennsylvania.
Bispham, J. L.	Philadelphia,	"
Bonsall, Charles T.	Trenton,	New Jersey.
Bower, Henry	Morrisville,	Pennsylvania.
Buck, Charles E.	Philadelphia,	"
Burton, David F.	Dover,	Delaware.
Caldwell, Jr., Samuel W.	Philadelphia,	Pennsylvania.
Canedo, Cipriano	Mexico.	
Conyers, James R.	Philadelphia,	Pennsylvania.
Corbett, John	"	"
Davis, John L.	"	"
Detwiller, John J.	Northampton,	"
Dieffenbacher, Calvin O.		"
Downs, Michael J.	Philadelphia,	"
Doret, Augustus M.	New York,	New York.
Douty, Henry P.	Philadelphia,	Pennsylvania.
Edwards, Wm. H.	"	"
Eggert, Charles H.	Bethlehem,	"
Emanuel Louis M.	Delaware Co.	"
Evans, Lemuel L.	Montgomeryville,	"
Farr, James M.	Philadelphia,	"
Franks, Edward G.	Lewistown,	"
Gahan, Edward J.	Dublin,	Ireland.
Gaillard, E.	Philadelphia,	Pennsylvania.
Gormly, George M.		Virginia.
Griffith, William H.	Philadelphia,	Pennsylvania.
Gutekunst, Frederick	Germantown,	"
Hance, Edward	Philadelphia,	"
Harper, David	Shippensburg,	"
Harres, J. Henry	Philadelphia,	"
Hartman, Wm. B.	Malaga,	New Jersey.
Hendel, Samuel D.	Philadelphsa,	Pennsylvania.
Herndon, James	Winchester,	Kentucky.
Heyser, William	Chambersburg,	Pennsylvania.
Holden, John	Frankford,	"
Hooper, John H.	Cambridge,	Maryland.
Humburg, William G.	Philadelphia,	Pennsylvania.
Humphreys, Jesse B.	Montgomery,	"
Jenks, J. Ridgeway,	Bucks Co.	"

Jones, Alfred	Philadelphia,	Pennsylvania.
Jones, Tobias W.	"	"
Jones, William		Ireland.
Kerlin, Frederick E.	Chester,	Pennsylvania.
Leuchsening, Herman	Havana,	Cuba.
Mansfield, Michael	Philadelphia,	Peunsylvania.
Mitchell, Alexander	"	"
Moore, Robert	Baltimore,	Maryland.
Morgan, David U.	Philadelphia,	Pennsylvania.
Morris, J. H. M.	Louisville,	Kentucky.
Ogden, Edward H.	Philadelphia,	Pennsylvania.
Patterson, William M.	"	"
Peltz, Richard	"	"
Perot, Joseph S.	"	"
Rittenhouse, Henry N.	"	"
Ritter, Bradford	"	"
Rogers, Charles S.	Norfolk,	Virginia.
Ruch, John H.	Pottsville,	Pennsylvania.
Savery, Jr., William	Philadelphia,	"
Selfridge, Matthew M.	Allentown,	"
Sharswood, J.	Philadelphia,	"
Sheaff, John F.	Delaware C.,	"
Shinn, James T.	Philadelphia,	"
Shrom, Charles F.	Carlisle,	"
Smith, Mahlon K.	Salfordville,	"
Southall, Turner H.	Norfolk,	Virginia.
Stackhouse, David L.	Bucks C.,	Pennsylvania.
Stevens, Hennell	Philadelphia,	"
Stoeckel, George W.	"	"
Thomas, Jesse J.	Beverly,	Rhode Islaud.
Thompson, Wm. B.	Philadelphia,	Pennsylvania.
Thompson, Wm. H.	"	"
Tomlinson, E.	"	"
Uhler, Jonathan K.	"	"
Verner, Chittick		Ireland.
Walker, Wm. H.	Waynesboro,	Pennsylvania.
Walters, Joseph P.	Philadelphia,	"
Watson, William S.	"	"
Willitts, Charles J.	Burlington,	New Jersey.
Wolff, Wm. H.	Philadelphia,	Pennsylvania.
Ziegler, Henry S.	Salfordville,	"